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China Report

SCIENCE AND TECHNOLOGY

No. 28



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CHINA REPORT

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CONTENTS

PAGE

NATIONAL DEVELOPMENTS

Chinese Archaeologists Survey Tarim Basin (XINHUA, 19 Jan 80).....	1
Briefs	
Jiangxi Science, Technology Conference	2
Anhui Science Meeting	2
Guangxi Science, Technology Conference	2
Nei Monggol Science Conference	3

PHYSICAL SCIENCES

'XINHUA' Features Gifted Postgraduates at Academy of Sciences (XINHUA, 17 Feb 80).....	4
--	---

APPLIED SCIENCES

Astronaut Trainees Subjected to Rigorous Training (Xiao Yong; JIEFANG RIBAO, 11 Jan 80).....	5
Training of Chinese Astronauts Depicted in Photos (WEN HUI PO, 16 Jan 80).....	10
China Makes Progress in Study of Astronomy (XINHUA, 29 Jan 80).....	12
'XINHUA' Describes Astronomical Work at Yunnan Observatory (XINHUA, 7 Feb 80).....	13

CONTENTS (Continued)

Page

Total Solar Eclipse Observed in Yunnan Province (XINHUA, 16 Feb 80).....	15
China's First Totally Automatic Marine Buoy 'Nanfu No 1' Successfully Built (NANFANG RIBAO, 10 Feb 80).....	17
DJS220-1 General Purpose Computer System Successfully Developed (Zong Ming; BEIJING RIBAO, 26 Jan 80).....	19
Qinghua University Develops Chinese Character Generator (TA-KUNG-PAO, 22 Dec 79).....	21
Briefs	
Integrated Circuits	23
New Laser Mimeograph Machine	23
Yunnan Electron Microscope	23
New Laser Optical Instrument	23
Scientific Inventions	24
Laser Instrument	24
Shandong Electronic Industry	24
Computer Systems	24

LIFE SCIENCES

'GUANGMING RIBAO' on Medical Training at Sea (Zhao Yuelong; GUANGMING RIBAO, 15 Jan 80).....	25
Schizophrenia Treated by Lactone of Corriaria, Tutin (Yuan Deji; ZHONGHUA SHENJING JINGSHENKE ZAZHI, 12 May 79).....	26
Table of Contents of 'STUDIA MARINA SINICA' No 11, December 1976 (HAIYANG KUXUE JIKAN, Dec 76).....	39
Briefs	
Shaanxi Preventive Medicine	42
Shanghai Universities Pool Resources	42
Encyclopedia Volume	42
Snail Fever Drug	43
Medical Team in Yanan	43
Shanghai Traditional Chinese Medicine	43
National Medical Seminar	43

CONTENTS (Continued)

Page

Malaria Prevention	44
Shanghai Ear Function Forum	44
Shanghai Public Health Meeting	44
Medical Science Academy	44
Zhejiang Schistosomiasis Conference	45
Kidney Preservation	45
Forensic Medicine Text	45
Acupuncture Team Visits U.S.	45
Shanghai Health Conference	46
Hebei Herbalists Restoration	46

ABSTRACTS

BIOLOGY

SHIYAN SHENGWU XUEBAO [ACTA BIOLOGIAE EXPERIMENTALIS SINICA], No 2, Jun 79.....	47
--	----

OCEANOGRAPHY

HAIYANG KEXUE JIKAN [STUDIA MARINA SINICA], No 11, Dec 76....	55
---	----

PALEONTOLOGY

GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICA SINICA No 1, Jan 79, No 2, Mar 79.....	59
--	----

NATIONAL DEVELOPMENTS

CHINESE ARCHAEOLOGISTS SURVEY TARIM BASIN

OW191238 Beijing XINHUA in English 1228 GMT 19 Jan 80 OW

[Text] Urumqi, 19 Jan (XINHUA)--Archaeologists from the Xinjiang Institute of Archaeology have just completed a survey of the site of ancient Lou-Lan in the Tarim Basin in Xinjiang. This is the first survey of the site made by Chinese archaeologists.

The ancient site of Lou-Lan, later called Shan-Shan, located in the area of Lop Nur in the eastern Tarim Basin, was an important point on the old Silk Road. This state, in what used to be called the western regions, became submerged in the sands in the early centuries of the Christian era.

The site, on dry stony land, remained undiscovered until 1900 when Swedish explorer Sven Hedin went there. However, it continued to be isolated on account of its dangerous and difficult terrain.

Among the archaeological finds at the site are wooden utensils, pottery, jade objects and bronzes as well as dozens of "wuzhu" bronze coins, first minted in the western Han dynasty (206 B.C.-A.D.24), and a coin of the Kushan empire also known as the Indo-Scythian empire, founded by Great Yuezhi (Yuechi) in the second century in Central Asia.

Scientists also found rock carvings in the ravines of Kuluke mountain in western Lou-Lan. These carvings depict horses, camels, sheep and plants, among other things.

These discoveries tell much about economic and cultural exchanges between China and western countries in early times, as well as historical ties between the border areas and other parts of China.

CSO: 4020

NATIONAL DEVELOPMENTS

BRIEFS

JIANGXI SCIENCE, TECHNOLOGY CONFERENCE--The science and technology conference of the Jiangxi People's Government was held in Nanchang on 31 January with the participation of 500 persons. Those attending included Ma Jikong, secretary of the Jiangxi Provincial CCP Committee; Xu Gin, Standing Committee member of the Jiangxi Provincial CCP Committee and vice provincial governor; and Li Shizhang, vice provincial governor. Xu Gin presided over the conference and Ma Jikong spoke. The participants will convey and implement the spirit of the national conference on science and technology, make plans on the 1980 tasks of scientific research throughout the province, exchange experiences in scientific research and reward outstanding scientific research achievements in 1979. It was disclosed at the conference that in the past year, the people in Jiangxi have firmly grasped the building of scientific and technological ranks. At present, 97 percent of the miscarriages of justice, trumped-up cases and erroneous decisions among the science and technology personnel have been reversed. Some one-third of the 25,000 science and technology personnel who were assigned to other posts have returned to their proper places. [HK090130 Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 1 Feb 80 HK]

ANHUI SCIENCE MEETING--According to ANHUI RIBAO, the Anhui Provincial Scientific and Technological Commission held a discussion meeting of administrative office heads of 23 scientific research institutes under the provincial industrial and communications, capital construction, financial and trade and other departments in mid-January. The provincial party committee and the provincial people's government attached great importance to this meeting. Vice Governor Yang Jike attended and addressed the meeting. Su Yu, secretary of the provincial party committee, and Meng Jiaqin, vice governor of the provincial people's government, attended. Su Yu made an important speech on the restructuring and improvement of scientific research units in the period of readjustment, the integration of scientific research with production and the expansion of the right of decision, among other issues. [OW020315 Hefei Anhui Provincial Service in Mandarin 1100 GMT 31 Jan 80 OW]

GUANGXI SCIENCE, TECHNOLOGY CONFERENCE--The Guangxi science and technology conference was held in Nanning from 22 to 29 January. During the conference, the Guangxi Science Committee presented certificates and bonuses to units and individuals who scored outstanding science and technology

achievements for 1978-1979. The conference further unified the views on intellectuals and studied ways to implement the party's policy on intellectuals. A total of 300 persons took part in the conference. Qin Yingji, secretary of the Guangxi Regional CCP Committee and chairman of the regional people's government, attended the conference. Speaking at the conference were Zhou Guangchun, secretary of the regional CCP committee and vice chairman of the regional people's government; Luo Libin, Standing Committee member of the regional CCP committee and vice chairman of the regional people's government; and Zhang Shengzhen, Standing Committee member of the regional CCP committee. (Ou Zhen), vice chairman of the regional science committee, made a work report on science and technology and a summation of the conference. The conference revealed that there are few backbone elements in science and technology research in the region.

[HK020650 Nanning Guangxi Regional Service in Mandarin 1130 GMT 30 Jan 80 HK]

NEI MONGGOL SCIENCE CONFERENCE--From 10 to 18 January, a regional conference of directors of scientific and technological commissions at all levels was held in Hohhot Municipality, Nei Monggol Region, to map out scientific and technological plans and tasks of 1980. The conference called for efforts to spread and develop the scientific and technological work on the basis of the local conditions so as to promote the agricultural production. The conference established tentative regulations on the functions of scientific and technological commissions at league or municipal levels and at banner or county levels and approved tentative regulations on scientific and technical planning. Ting Mao, second secretary of the regional CCP committee and chairman of the Standing Committee of the regional people's congress, and Zhou Beifeng and Li Binsan, vice chairmen of the regional people's government, attended the conference. [Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 27 Jan 80 SK]

CSO: 4008

PHYSICAL SCIENCES

'XINHUA' FEATURES GIFTED POSTGRADUATES AT ACADEMY OF SCIENCES

OW170753 Beijing XINHUA in English 0720 GMT 17 Feb 80 OW

[Text] Beijing, February 17 (XINHUA)--Outstanding achievements have been registered by a number of particularly talented postgraduate students among the more than 1,000 enrolled in 1978 at the Chinese Academy of Sciences.

Shi Songlin, under the guidance of his tutor mathematician Qing Yuanxun, has with conclusive data verified that the maximum of the limit circle of differential equation (E2) must be bigger than or equal to four, thus repudiating the conclusion that the circle maximum was only three. That conclusion had been asserted by noted Soviet mathematician I. G. Petrovskiy in the early 20th century. This new discovery has attracted the attention of mathematicians both at home and abroad, and has led to an active study of the subject. The postgraduate, who was once a mathematics teacher at a middle school, has been engaged in the study of the limit circle for a long time.

Feng Yulin wrote "Verifying Properties of Parallel Programs" which improved some research results in software discipline achieved by foreign experts. He, in cooperation with his fellows, has designed a programming language of the XYZ system and with this language worked out a small operating system.

Zhou Xianqing, enrolled in the University of Science and Technology of China, has summarized the latest researches in proof of program undecidability, consistency and completeness and has advanced his own theoretical viewpoint in this field. Another postgraduate, Ye Zhijiang, used precedence grammar models of software compiler theory in an operating system and invented a method which can in a practical way solve troubles in the system.

CSO: 4008

APPLIED SCIENCES

ASTRONAUT TRAINEES SUBJECTED TO RIGOROUS TRAINING

Shanghai JIEFANG RIBAO in Chinese 11 Jan 80 p 2

[Article by Special Reporter Xiao Yong [5135 0516] of SCIENCE AND LIFE :
"An Interview With Our Nation's Astronaut Trainees"]

[Text] A carload of motion picture cameras and movie lights and props rushes along the highway.

We are shooting a large scale science education color film, "Marching Towards the Universe." This time, our filming crew is going to film our nation's training of astronauts.

The car travels for a long time. Then a row of buildings as well as several gigantic circular structures appear. The car stops in front of a building. We finally arrive at our destination.

The atmosphere here is lively. Behind the big building is a very large field where an exciting basketball game is in progress. Some youngsters are practicing long distance running, high jumps, hurdles, and still others are twirling... "Du-----", the instructor blows the whistle. The youngsters immediately stop their physical workouts and enthusiastically run over to help us unload and move the filming equipment.

The leadership has assigned Comrade Lao Huang as our adviser. We have found out from Lao Huang that some of these active youngsters are trainees for various space travel experiments and others are participating in space travel training to create conditions to nurture our nation's future astronauts.

An astronaut not only must have a healthy body, he must also have strong stamina and must have achieved a certain level in science and culture. Most of the people participating in astronaut training have been selected from pilots. They are here to receive various kinds of specialized training.

We begin to film their physical exercise. We film them while they are running, diving and swimming and we film their life in various kinds of specialized training.

Inside a not-too-large room our cameras aim at a deck chair with a blanket on top. A youngster participating in the training lies on the chair. As Lao Huang presses a button, the chair begins to shake violently. This is called the "vibration test." After a rocket is launched, the astronaut is subjected to violent vibrations. Therefore, the astronaut trainee must adapt to these violent vibrations.

Then we come to a tall and large room for filming. An object like a small vehicle hangs in the room. At the time of test filming, comrade Xiao Xu of our filming crew said he wanted to try it so he stood inside the "small vehicle." Lao Huang used leather straps to tie Xiao Xu tightly to the seat inside the "small vehicle." Then, he pressed the button, and this "small vehicle" started to sway back and forth higher and higher like a swing. Xiao Xu sat inside and proudly nodded his head at all the others. Suddenly, Lao Huang pressed another button and the chair that Xiao Xu was sitting in started to rotate. Thus, Xiao Xu was swinging back and forth and rotating at the same time. The smile on his face disappeared. Not long afterwards, he cried out "I can't take it anymore." Lao Huang hurriedly stopped the vehicle. Xiao Xu sat there with a greyish white face and tight eyebrows. He said sitting inside felt as if he were sitting in a boat being tossed about in severe winds and waves in the sea. His head was dizzy and he felt nauseous.

When a rocket is launched, it often moves forward and rotates at the same time. Future astronauts must be able to withstand this experience.

When we filmed the centrifugal test, the astronaut received even more severe tests.

The building is cylindrical and the inside is practically empty except for a vehicle-like object hanging at the center with a long steel arm extending outward. At the tip of the steel arm is also an object like a small vehicle. The steel arm extends horizontally. A reclining seat is inside the "small vehicle." The astronaut lies on this and fastens the belts. Then the "small vehicle" begins to revolve inside the round building. From a television screen we film their facial expressions as they spin at high speed.

Lao Huang tells me this is a centrifuge. As a spaceship takes off, the astronaut will experience a great horizontal centrifugal force. This high speed centrifuge simulates the situation at the time a spaceship takes off.

We also filmed the exciting and astonishing "shock test." The "shock tower" is a steel tower several dozen meters high. Youngsters participating in the training are tied tightly to chairs covered with foam plastic. They are slowly elevated to the top of the tower. Suddenly, the hanger releases itself and the trainees descend with a big "bang" as they touch the ground.

Lao Huang says when the astronaut returns to Earth, and if he lands on land, he will experience such violent shock. Astronauts must undergo such shock training.

Most interesting was the filming of the "weightlessness test." In space, astronauts are in a state of weightlessness and float around inside the spacecraft. It is not easy to simulate a weightless environment on the ground. An astronaut trainee sits inside a small fighter airplane. He is the only passenger. The cameraman can only affix the camera to the airplane and use remote control to control the camera.

The fighter takes off and whizzes into the sky high above. In the blue sky it sometimes tilts and sometimes dips and flies in a parabola. The movie camera automatically films scenes of the youngster participating in the training inside the cockpit.

After these scenes are developed and everyone sees them, it is extremely interesting: The youngster who has participated in the training is eating a meal and as he let go of the aluminum spoon, it immediately starts to float in air. Even the plastic bag filled with rice dances in the air.

When the airplane flies in a parabola, an artificial weightless environment is created lasting about a dozen or so seconds.

After filming these special tests, we move the movie camera into a simulated spaceship to film a simulated living routine of those participating in astronaut training in space.

The model spacecraft is designed according to the shape of future spacecraft. The entire flying cabin is made of metallic plates. The inside of the vehicle is very small, totalling only a dozen or so square meters. After the cabin door is shut, all is quiet inside. This is because it is silent in space. The astronaut must become accustomed to this silent and monotonous life.

In the model we quickly feel stuffy. This is because the air pressure inside the spaceship is very low--the universe is a vacuum. After the vehicle enters space, only a rather low air pressure can be maintained inside the cabin.

There are only a few small round windows in the model spacecraft. The windows are fitted with two layers of thick glass and covered with a black cloth. Lights are on inside the cabin. In here, there is no alteration of day and night.

Lao Huang pulls open the black curtain of a small round window. We see a very beautiful scene: The outside is pitch black. Silver stars appear in the night sky and below them is a huge blue sphere slowly turning.

I do not understand what this is all about. Lao Huang tells me: This is a simulation of the scene an astronaut sees in space. The blue sphere is Earth. Every astronaut must have a sound knowledge of astronomy. He must be familiar with the stars in the sky and use the stars as "road signs" to determine the vehicle's position.

Inside the very small model we film scenes of participants in astronaut training riding a bicycle. This bicycle does not have wheels, only pedals, and riding it requires a lot of effort. Astronauts must ride this kind of stationary "bicycle" every day while in space to stimulate circulation and exercise the body.

We also filmed scenes of participants in astronaut training eating meals. On a small table are placed pieces of compressed biscuits only the size of chessmen and pieces of square "moon cakes" the size of half a match box. These pieces are called "bite-size food," this means the food can be consumed in one mouthful and need not be broken up before ingestion.

We filmed the interesting way an astronaut eats "moon cakes": After he places the "bite-size food" into his mouth, he immediately presses his lips together and then he chews his food with his lips closed tightly until he swallows the food. This is because the spacecraft in space is in a state of weightlessness. If you open your mouth slightly, the food crumbs will fly out from your mouth and the crumbs will be scattered throughout the spaceship.

I take a close look at those "moon cakes" and discover that their surface is shiny as if wrapped by a layer of transparent film. Lao Huang says that is a layer of "edible plastic" painted over the cakes. This layer of film is painted on the cakes to prevent the cakes from crumbling into crumbs when they are chewed.

In separate plastic bags I also see noodles and egg fried rice, etc compressed into rectangular pieces. All these foods have been dehydrated and can be kept for long periods. When the food is to be consumed, a pistol-like water gun is used to shoot hot water into the plastic bags and the food becomes soft. It is now ready for eating. Of interest are pairs of dried red lobsters. After being soaked in hot water, they taste as good as fresh ones.

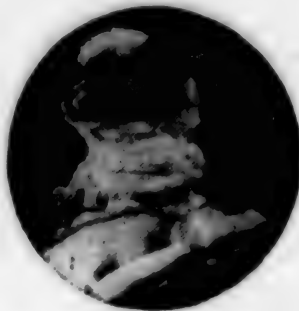
Then we began filming scenes of youngsters participating in astronaut training wearing spacesuits. I realize only now that a spacesuit consists of many many layers. Underwear is first put on, then one layer, another layer, and finally the outer mask. The shoes and the pants of the spacesuit are joined together and the tops are joined to the pants. After putting on the gloves, the gloves and the sleeves are tightly connected. After the helmet is donned, is tightly connected to the collar. The spacesuit does not have any buttons but uses zippers which are pulled tight. These zippers are specially made. After they are zipped up, they are air tight. The helmet is made of special transparent plastic. It is very durable. After the spacesuit is properly put on, an oxygen tank must be carried on the back and oxygen must be piped into the helmet. In this way, the astronaut can live in a vacuum. The suit is made of synthetic fibers. The back is coated with rubber and is air tight.

After the astronaut puts on the air tight spacesuit, how can he eat? Ha, this is really interesting for underneath the face mask is a small hole. The hole is stopped up by a piece of rubber. Food is placed in an aluminum tube like toothpaste. When eating, the small tube on the toothpaste-like container is squeezed forcefully into the rubber in the hole. Then the astronaut must use his hand to squeeze the walls of the tube to force the food out for him to eat. Just eating one meal takes more than half an hour.

(Originally published in the first volume of "SCIENCE AND LIFE," the article has been edited and slightly changed for reprint.)



Astronaut trainee sucks in food paste inside the aluminum tube through the dining hole.



This animal was safely returned from our nation's biological exploration rocket.

APPLIED SCIENCES

TRAINING OF CHINESE ASTRONAUTS DEPICTED IN PHOTOS

Hong Kong WEN HUI PO in Chinese 16 Jan 80 p 2

[Text] Photos provided by the Shanghai Science Education Motion Picture Studio; Photos taken by Zhang Chongzi [1728 1504 1015]



[left] Astronaut trainee prepares to enter model spaceship

[right] Wearing spacesuit



[left] Lying on the vibration table.

[right] Shock test--Dropping from a height of over 20 meters!



Celestial bodies outside the spaceship can be seen on the reflecting screen.

9296

CSO: 4008

APPLIED SCIENCES

CHINA MAKES PROGRESS IN STUDY OF ASTRONOMY

OW290808 Beijing XINHUA in English 0738 GMT 29 Jan 80 OW

[Text] Beijing, 29 Jan (XINHUA)--China has made tangible progress in astrogeodesy, solar physics, stellar physics and radio astronomy. This is shown by an exhibition at the Beijing Planetarium.

China's solar study began from scratch after its nation-wide liberation in 1949. From a dozen people then, astronomers now number well over 2,000 and there are five observatories as against only one in 1949.

Chinese astronomers observe solar spots, flares and prominence with solar spectral metres and chromospheric and radio telescopes. The Yunnan Astronomical Observatory has taken high-resolution photos of details of the structure of sun spots. The Beijing, Yunnan and Purple Mountain observatories are able to forecast sudden interference in the ionosphere in the service of national economy.

Scientists in Beijing and Nanjing are studying variables, flares, novas and close binary stars. They have done research into the theory of the galactic density wave. They discovered two dozen variables, one being of great value for the study of the evolution of stars.

In cooperation with U.S. Professor Chia-chiao Lin, Chinese astronomers studied some questions that he raised related to the theory of the galactic density wave, worked out a model and solved the question of maintaining the wave.

Chinese astronomers have discovered there comets and hundreds of small planets.

They have also studied the law governing polar motion and set up a system of earth polar coordinates for China.

China began to make its own astronomical year book in 1966, thus ending reliance on foreign compilations. Such astronomical instruments as the photo-electric astrolabe, electronic camera and photographic zenith tube are now being made in China.

APPLIED SCIENCES

'XINHUA' DESCRIBES ASTRONOMICAL WORK AT YUNNAN OBSERVATORY

OW072221 Beijing XINHUA in English 1506 GMT 7 Feb 80 OW

[Text] Kunming, February 7 (XINHUA)--All ready for the total solar eclipse on February 16, a modern astronomical observatory scans the skies from the Phoenix hills that overlook a large, beautiful lake in Kunming.

The Yunnan Observatory on the Yunnan-Guizhou plateau at 2020 metres altitude above sea level has clear visibility of the heavens for most of the year.

It is one of three major sites for observation of the coming total eclipse. Chinese scientists and compatriots from the Hong Kong amateur astronomers' society are flocking to the observatory, which lies in the path of the moon's shadow.

The observatory is south China's base for astronomical research with its departments of stellar physics, solar physics, radio astronomy, celestial mechanics and geodetic astronomy.

Deputy director of the observatory Zhang Borong told XINHUA, "We are just making a start."

The observatory, staffed by 49 researchers with an average age of 36, was built in 1972. Its predecessor, built in 1939, was merely a station affiliated with the Purple Mountain Observatory in Nanjing. The astronomers then merely collected information and sent it on to Nanjing.

In recent years the present observatory has made a name for itself in China's astronomical circles because of a series of outstanding research results. It was commended by the last national science conference in March 1978.

The observatory is noted for its solar research. It has collected thousands of sun spot pictures and data helpful to research in solar activity and solar-earth relations. With a refractor, it has been following the daily development of sun spots.

Its observations play an important part in China's solar activity forecasts. It has been making monthly, daily and hourly forecasts, and through long

periods of observation, the astronomers came to understand that strong rotation, motion, the dividing and reunifying of sun spot groups are related to the explosion of solar flares.

It has taken pictures with a chromospheric telescope recording thousands of solar flares of various sizes, the biggest being the ones on November 5, 1970 and August 4, 1978.

The astronomers studied a rich file of ancient Chinese astronomical records and in cooperation with scientists of other observatories, had drawn charts of the activities of sun spots as observed by the ancient Chinese. This helped them recognize a long cycle of 250 years, of solar activity and a short cycle of 11 years. The latter can be traced as far back as the early Christian era.

CSO: 4008

APPLIED SCIENCES

TOTAL SOLAR ECLIPSE OBSERVED IN YUNNAN PROVINCE

OW161701 Beijing XINHUA in English 1629 GMT 16 Feb 80 OW

[Text] Kunming, February 16 (XINHUA)--The moon's shadow fully hid the sun at 18:32'26" (local time) in Ruili, Yunnan Province, today.

The path of the shadow in China was 1,100 kilometres long and 100 kilometres wide. The total solar eclipse lasted one minute and 35 seconds.

The moon's shadow that swept from Africa, the Indian Ocean, India and Burma entered China from Ruili County at 17:27'14" (local time).

It sped across 24 counties in the province and disappeared in the Leigong Mountains in Guizhou Province.

Scientists atop the Phoenix Hill seven kilometres northeast of Kunming were disappointed as cloud covered the eclipsed sun just as the total eclipse took place. Photoelectrical observation could not proceed.

The inhabitants of Kunming viewed this spectacle from some parts of the city.

While the photoelectrical observation at the Yunnan observatory failed to achieve what was expected, all research projects at Ruili and Luxi proceeded well, XINHUA learned from the General Organizing Committee.

Nine astronomical groups of nearly 200 scientists were stationed in Ruili and Luxi on the Chinese-Burmese border. Scientists from the Purple Mountain and Beijing observatories, the Geophysical Institute of the Academy of Sciences and the Hubei Physics Institute atop a mountain camping site in Ruili, worked to record the corona, the variations in electron density of the ionosphere and the effects of the eclipse on the geomagnetic field.

Some scientists from the Institute of the History of Natural Sciences in Beijing came to confirm some data reported by ancient Chinese astronomers.

When the eclipse was seen in China, the sun was already beginning to set. The elevation of the sun was low and total solar eclipse only lasted a short time. "It is not ideal for observation," said one scientist to XINHUA, "however, it is still a valuable moment for Chinese astronomers in making astronomical and physical studies."

Though cloud cover interfered with photoelectrical observation in Kunming, the five dish-like antennas of the radio telescopes of the Yunnan Observatory on the Phoenix Hill were turned to face the sun and recorded the curves of the solar radio waves.

Amateur astronomers from Hong Kong were also among the crowds here, aiming their camera at the sky.

Physicists from institutes in Beijing worked in a cement tunnel in a beautiful, forested mountain of the "Black Dragon Well" ten kilometres north of Kunming. Wang Qianshen, an associate researcher of the Physics Institute, was looking for the effects of the absorption of gravity by the moon's shadow, he told XINHUA: "This is a subject foreign scientists are also probing."

Young Dai girls in long, colourful skirts gathered on bamboo balconies of their homes or on village grounds, raising their faces towards the sky. People of Jingpo, Yi, Hani and other minorities went out of their mountain homes to look at the darkened sky in great excitement. They were told not to turn on the lights so as not to interfere with the photoelectrical observation.

CSO: 4008

APPLIED SCIENCES

CHINA'S FIRST TOTALLY AUTOMATIC MARINE BUOY 'NANFU NO 1' SUCCESSFULLY BUILT

Guangzhou NANFANG RIBAO in Chinese 10 Feb 80 p 1

[Article: "An Oceanographic Pearl on the Sea of Hainan Island; Our Nation's First Automatic Oceanic Buoy "Nanfu No 1" is Successfully Developed and Built; Experts Believe It Is Basically at the Same Level of Sophistication of Similar Buoy of the 1970s Built By Foreign Nations"]

[Text] Reporter Chen Guo [7115 0948] reports:

Our nation's first large remote surveying, remote control and remote communications oceanographic and hydrometeorological buoys installation and system using numerical transmission has been successfully developed and built. This fully automatic oceanographic buoy named "Nanfu No 1" was dropped in the sea east of Hainan Island last October. After undergoing more than 3 months of test operation in gusty winds of 8 on the Beaufort scale, its operation was normal. In the first 10 days of this month, the Chinese Academy of Sciences invited together the nation's experts to Guangzhou to evaluate this scientific research achievement. They believed the installation was up to the demands of the design, and basically reached the level of sophistication of similar buoys of the 1970s built by foreign nations. This new experimental means is of important value to the development of our nation's research work in oceanographic science and work in production and construction.

"Nanfu No 1" is completely installed with domestically made components, modules and materials. It is shaped like a cake with a buoy 6 meters in diameter and a height of 1.4 meters. A platform nearly 4 meters high is above the capsule and a tower-shaped antenna stands on the platform. Inside the circular capsule are many kinds of precision instruments weighing nearly 13 tons. Various kinds of sensors are installed on the buoy. They can automatically measure the speed of flow of sea water, the direction of flow, water temperature, salinity, height of water waves, cycles of water waves, direction of wind at the surface of the sea, greatest instantaneous wind speed, average wind speed, atmospheric temperature, bearing of the buoy and greatest instantaneous tension of the anchor chain, and the various measured data can be accurately transmitted to the automatic receiving

station on land at Guangzhou 500 km away. The number of measurements can be adjusted according to need, from eight times a day to 24 times. The buoy can also correct for time and change work procedures upon command sent out by the ground station. If an accident occurs on the buoy, it will automatically transmit a warning signal to the ground station. All data received by the automatic receiving station are processed by a computer system and converted to ordinary information for use by those concerned.

Accurately and timely gathering of oceanographic and hydrometeorological data is of extremely important significance to the development of shipping, meteorology, deep sea fishing, aquatic culture in sea water, agriculture and national defense. Since the 1970s, many developed oceanic nations have utilized this means of oceanic automatic observation and surveying buoys to gather oceanic data. Compared to regular oceanic survey ships, it is less limited by bad oceanic weather conditions. It can make observations and measurements for long periods and continuously. It not only saves on expenses but also provides highly reliable data. The task of research and development of "Nanfu No 1" was jointly carried out by the South Sea Oceanography Institute, Automation Institute and Oceanography Institute of the Chinese Academy of Sciences. Scientific research personnel spent 3 years of efforts, overcame many difficulties and finally achieved success. During the course of research and development, they also received vigorous assistance from concerned plants, departments of ocean shipping and sea lanes and the Navy.

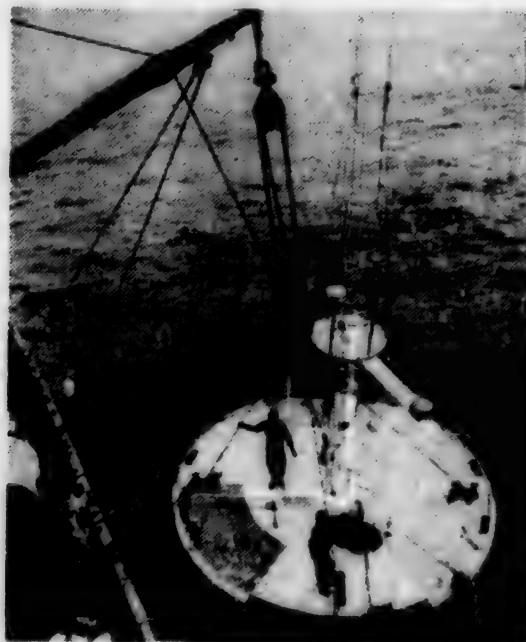


Photo above shows dropping of "Nanfu No 1". Photo taken by Tian Zhiqiang [3944 1807 1730]

APPLIED SCIENCES

DJS220-1 GENERAL PURPOSE COMPUTER SYSTEM SUCCESSFULLY DEVELOPED

Beijing BEIJING RIBAO in Chinese 26 Jan 80 p 1

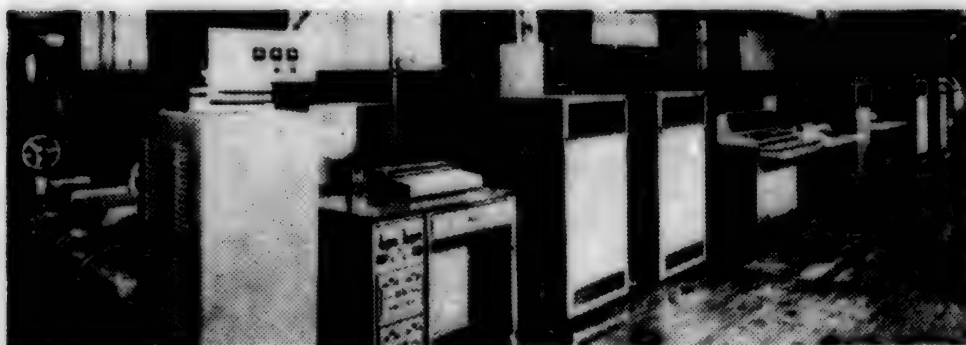
[Article by Zong M'ng [1350 2494]: "Beijing Wire Communications Equipment Plant Successfully Develops the DJS220-1 General Purpose Computer System with the Assistance of Concerned Units"]

[Text] One of our nation's first medium and large sized general purpose computer system DJS200--the DJS220-1 computer system--was successfully developed recently at the Beijing Wire Communications Equipment Plant with the assistance of concerned units.

Systematizing and serializing the computer has many advantages. The various models in the same line possess general applicability because when they are being designed, they must be structurally uniform, such as possessing a standard computational language, designating system and data format, standardized data coding, etc. The user who learns to use one model will have basically grasped the use of other models. When higher class models replace the old ones, already existing software can be continually used and compiling new software is not necessary. This not only facilitates hastening popularization and use of the computer but also facilitates organizing a network of multiple-computer systems and a network of computers whose use is shared among many users so that the computers which are limited in number can be even more functional. The DJS200 series has a total of four models. Our nation had already successfully developed two of the models. Now, the 220-1 model has been successfully developed. This is a welcomed achievement in our nation's endeavor to design and produce our own line of computers.

The DJS220-1 model computer is equipped with an operational system and programming language system software suitable for scientific computations, data processing and real time control operations. This computer system is jointly designed by ten units including the North China Computer Technology Research Institute, Nanjing University and the Beijing Wire Communications Equipment Plant. During the course of designing and developing it, advanced technology at home and abroad was widely used with particular attention paid to the weak links existing in our nation's past research and development of various types of computers. At the recently held

evaluation meeting sponsored by the Computer Industry Bureau, this computer system was thoroughly evaluated and it proved to be reliable and stable in operation. Its performance is good and it has reached the advanced levels in the nation.



With the assistance of concerned units, the Beijing Wire Communications Equipment Plant successfully developed the DJS220-1 model computer system. Photo taken by Li Zhaojiang [2621 0340 3068]

9296

CSO: 4008

QINGHUA UNIVERSITY DEVELOPS CHINESE CHARACTER GENERATOR

Hong Kong TA-KUNG-PAO in Chinese 22 Dec 79 p 2

[Article: "New Breakthrough in Technique of Processing Chinese Character Signals; Chinese Character Generator Successfully Developed, Over 6,000 Commonly Used Characters Are Stored; It Can Output Complete Matrix Characters and Symbols, Over 2,000 Characters Are Output Per Second; It Also Has Automatic Editing and Correction Features"]

[Text] According to news from Beijing, Qinghua University has successfully developed a Chinese character generator using a 32 x 32 matrix for processing of signals for Chinese characters. The prototype experimental generator was completed in May, 1978. Sample generators were produced in September of this year. The successful development of the generator is a new step in the study of techniques of processing Chinese character signals.

The technique of processing Chinese character signals is a major subject being studied at home and abroad. The Chinese character generator is an important piece of equipment that supplies Chinese character forms in the system for processing Chinese character signals. The 32 x 32 matrix Chinese character generator records Chinese characters in 32 x 32 matrices and stores them in a specially-made E type magnetic core. This prototype generator's magnetic core stores a total of over 5,000 commonly used Chinese characters and over 1,000 Chinese characters in pinyin, foreign language symbols and various other symbols, totalling 6,161 symbols. In operation, the generator outputs complete character symbols composed of dots. The characters are 4 millimeters in size and the resolution is good. There are eight lines per millimeter. According to its design capabilities, output speed is over 2,000 characters per second. In the course of research and development, many measures were taken to prevent the interference which had occurred. After actual observation and statistical computation of 6,714 characters and symbols, the margin of error of misplaced dots from the signals is below one in 10,000. The entire generator was test run for half a year and its performance was stable.

This type of Chinese character generator when equipped with peripheral equipment such as a printer, a cathode ray tube (CRT), interfaces (modem),

can become a large, or medium sized computer with its Chinese character output and terminal equipment. The system can print out material in various languages on ordinary paper or display the material on the screen for reading and editing. When connected to microprocessing equipment, it forms a simple Chinese character processing system used in fast printing of documents. It can also transmit numerical codes on paper tape for making fast copies at other localities. Its successful development is helpful to reforming printing technology.

At present, our nation's printing departments have already successfully developed automatic phototyping equipment that replaces manual setting and copper plate typesetting, but the equipment cannot yet be put into production. One of the major reasons is the lack of automatic proofing equipment. The Chinese character generator can be used for automatic editing and correcting. This has provided an advantageous condition for the use of new technology and raising production efficiency of the printing departments.

9296

CS0: 4008

APPLIED SCIENCES

BRIEFS

INTEGRATED CIRCUITS--Beijing, February 16 (XINHUA)--Construction of auxiliary projects has began for an imported assembly line for colour television linear integrated circuits in Wuxi, Jiangsu Province, according to the Fourth Ministry of Machine-building. Actual work on the assembly line and the power section will begin in May. Both the technology and equipment for these items will be provided by Toshiba, a Japanese firm in Tokyo making electrical machinery. Under the contract signed between the two sides, China will also buy the patent right as well as the equipment. The auxiliary projects now being built by China itself include a die making shop and machine maintenance shop. When the assembly line is put into operation in 1982, it will turn out 26 million circuits for 4 million colour TV sets a year. A colour TV kinescope plant, also imported, is now under construction in Shaanxi Province. The Wuxi project is an extension of the Jiangnan Radio Parts Factory, one of China's earliest transistor manufacturers. It has 2,000 technicians and workers. Technicians are now being trained to keep the new project going smoothly. [Text] [OW160307 Beijing XINHUA in English 0256 GMT 16 Feb 80 OW]

NEW LASER MIMEOGRAPH MACHINE--Beijing, 4 Mar--The Beijing Industrial University has recently successfully developed China's first high-speed laser-scanning mimeograph machine [duo xian sao miao ji guang gao su da yin ji 1122 4848 2217 2249 3423 0342 7559 6643 2092 0603 2623]. Compared with other mimeograph machines, the new device is faster, quieter in operation, highly reliable and simpler structurally. [Beijing XINHUA Domestic Service in Chinese 0111 GMT 4 Mar 80 OW]

YUNNAN ELECTRON MICROSCOPE--Kunming, 30 Jan--A scanning electron microscope with 40 to 140,000 magnification recently has been successfully developed and manufactured by the Yunnan University. After being used and tested by the concerned research units, college's production departments and some 70 experts, it has been proven to meet advanced standards. Formal production will begin at the Chengdu instrument plant. [Beijing XINHUA Domestic Service in Chinese 0137 GMT 30 Jan 80 OW]

NEW LASER OPTICAL INSTRUMENT--Beijing, 5 Mar--Qinghua University recently successfully developed China's first automatic double-frequency laser interferometer [zi dong bu chang shuang pin ji guang gan she yi 5261 0520 5943 0326 7175 7340 3423 0342 1626 3195 0328]. The index of refraction and calculator are its features. Its operational speed is 2,000 cycles per second, or 11 times that of any similar foreign product. It can be widely applied in the heavy industry and national defense industry. [Beijing XINHUA Domestic Service in Chinese 0157 GMT 5 Mar 80 OW]

SCIENTIFIC INVENTIONS--Beijing, 23 Jan--The Cas Acoustics Institute has successfully made China's first ultrasonic microscope through which man can see what cannot be seen through general optical and electron microscopes. A research group under the Railway Ministry has successfully developed the use of ultrasonic waves to detect cracks on sleeves of internal combustion engine pistons. The technique has been proven satisfactory by internal combustion sections in Zhengzhou, Guangzhou and Shanghai. A sampling tube which can gather samples from deposits at the bottom of the sea recently has been developed and manufactured by the Oceanographic Instrument Institute under the State Oceanography Bureau. It can suck samples from the sea bottom 1,000 meters below the surface. Scientific researchers in Shanghai have successfully developed and made several kinds of solar energy heaters. One designed by the Shanghai Industrial Construction Designing Institute can maintain water temperatures between 40 and 70 degrees centigrade. [OW240301 Beijing XINHUA Domestic Service in Chinese 0124 GMT 23 Jan 80 OW]

LASER INSTRUMENT--Changsha, 17 Jan--After 4 years of work, Professor Gao Bolong of the PLA's University of National Defense Science and Technology and his assistants have succeeded in designing and producing an instrument for testing and determining the transmission ratio [tou she lu 6631 1410 3764] and reflection ratio [fan she lu 0646 1410 3764] inside the resonance cavity [xie zhen qiang 6168 2182 5204] in laser tubes. The instrument, called DF [as received] transmission-reflection instrument, has a testing accuracy of over .0005, equalling advanced international levels. [OW202155 Beijing XINHUA Domestic Service in Chinese 0338 GMT 17 Jan 80 OW]

SHANDONG ELECTRONIC INDUSTRY--Jinan, 27 Feb--The electronic industry in Shandong Province has been developing new production activities. The industry's output value this January increased 45 percent over the same period last year. The industry consists of 216 factories. In the past month or so, some of these factories have developed the following new production activities, in addition to fulfilling state plans: they are producing some light industrial goods in great demand, such as glass and metal articles, packing materials and so forth; they are developing repair services to meet public demand, and they are developing processing of products with materials provided from abroad. [OW271407 Beijing XINHUA Domestic Service in Chinese 0228 GMT 27 Feb 80 OW]

COMPUTER SYSTEMS--A system for batch processing and another system for time-sharing have been worked out for China's medium-sized electronic computer Model DJS-8. First designed by Chinese scientists and technicians in late 1960's and manufactured in quantity in early 1970's, this type of computer is extensively used in scientific research, production, teaching and national defense. Various programming languages can be used with these two new systems including fortran, algol and extended basic. The systems have won an award from the Fourth Ministry of Machine Building. [OW251255 Beijing XINHUA Domestic Service in Chinese 0335 GMT 22 Feb 80 OW]

CSO: 4020

LIFE SCIENCES

'GUANGMING RIBAO' ON MEDICAL TRAINING AT SEA

HK251151 Beijing GUANGMING RIBAO in Chinese 15 Jan 80 p 2 HK

[Report by XINHUA reporter Zhao Yuelong [6392 1471 7893]: "Doctors of PLA Navy Successfully Carry Out Surgical Operations While Aboard Warships"]

[Text] Actively exploring the technique of providing medical aid at sea, the medical personnel of the PLA navy have successfully carried out limb replants on animals and 50 surgical operations on people and accumulated experiences for providing medical aid at sea during wartime.

On a voyage, the reporter witnessed a limb replant operation on dogs carried out by the medical personnel of Hospital No 422. The doctors smoothly sewed together the blood vessels and nerves and reset the broken bones with forceps and tweezers. The operation took 5 hours. Several months later, the reporter again saw the two dogs which received the limb replant operation. They had completely recovered and were running about normally. According to information, the medical personnel of Hospital No 402 have successfully carried out 16 major and minor operations on 20 dogs at sea including brain surgery and operations on a ruptured liver and an ureterotomy.

The comrades of the Health Department of the PLA navy on board this vessel informed the reporter that many medical units of the PLA navy have carried out medical aid training at sea. Some are giving full physical checkups to the commanders and fighters aboard, some are treating the sick and carrying out emergency appendectomies and gastrectomy operations on patients.

To improve their ability to provide aid in the conversion from peacetime to wartime and from land to sea, the medical workers have studied and developed equipment suitable for giving aid at sea. In the provisional operation room of a vessel, the reporter has seen a variety of specially made equipment including a stretcher that can securely hold the injured patient suitable for taking up and down ladders and moving in and out of portholes; a light and versatile, yet sturdy "universal operating table"; a face mask that can hold vomit and keep the operation room germ free. To overcome seasickness, the masses of medical personnel constantly hold exercise at sea to increase their adaptability. Some have particularly chosen windy days: when the rolling of the vessel is more serious to carry out various complicated operations on animals. Through diligent practice, they have unremittingly improved their ability to provide medical aid at sea.

LIFE SCIENCES

SCHIZOPHRENIA TREATED BY LACTONE OF CORRIARIA, TUTIN

Beijing ZHONGHUA SHENJING JINGSHENKE ZAZHI [CHINESE JOURNAL OF NEUROLOGY AND PSYCHIATRY] in Chinese Vol 12 No 4 12 May 79 pp 196-200

[Article by Yuan Deji [6913 1795 1015] of the Psychology Research Laboratory of the Sichuan Medical College]

[Text] Beginning from January 1970, we have used various preparations from parasites of coriaria to treat schizophrenia, and as the type of medicinal drugs improved, we reported individually on their clinical observations (1,2). The following is a report on the treatment of schizophrenia using injections of crystalline lactones of coriaria extracted from parasites of coriaria (lactoni Coriariae, lactone of coriaria, abbreviated as mixed crystals in the following) to treat 90 cases, and using injections (abbreviated as simple crystals in the following) of hydroxyl coriaria toxin (tutin) to treat 50 cases.

Clinical Data and Methods

1. Selection of Cases

All cases were hospitalized patients positively determined to be schizophrenics. Their general physical condition was healthy. From June 1974 to April of 1975, we treated 90 cases with mixed crystalline injections. From September to December of 1977 we treated 50 cases with simple crystalline injections. Of the total, 81 were males and 59 females. Ages ranged from the youngest of 16 years to the oldest of 46 years. The shortest history of the disease was 7 days and the longest was 19 years. Seventy-five patients had a history of illness of 2 years or less and 65 patients had a history of illness of more than 2 years.

Before treatment, the patients were given blood tests, urination pattern tests, and examinations of liver and kidney functions. Chest X-rays and electrocardiograms of a number of patients were taken. During treatment, no other anti-psychotic drugs or physical therapy were given these patients as combined treatment.

2. Method of Treatment

The medicine was a liquid for injection prepared from the hydroxyl coriaria toxin obtained by separation from the mixed crystals extracted from the parasitic leaf of coriaria by our college's pharmacology department (3). The patients were given intensive treatment with full-time nurses. Intramuscular injections were given the patients in the morning on an empty stomach and the patients were told to lie in bed and rest. In general, after half an hour to one hour after the injections, the patients began to feel nauseous, vomit, sweat, their consciousness became unclear, muscle spasms and convulsions and other such reactions to the medicine occurred. After 6 to 8 hours reactions to the medicine disappeared. During the course of treatment, if convulsions occurred three times or if the interval between convulsions was less than half an hour, immediately effective anti-epileptic drugs were administered such as 0.5 grams of isopentyl barbital sodium or sedative injections of 20 milligrams, intramuscular injections or intravenous infusion pumping were administered. When convulsions occurred, the method of protection used was the same as electro-convulsive therapy. Those patients who had convulsions more than 5 times and who showed acid poisoning were treated accordingly. During the course of treatment, those who were not violently affected by reactions to the medicine were not given specialized treatment but were given intramuscular injections of 0.2 grams of benzene barbital sodium to prevent occurrence of convulsions after the patients had left the clinic.

3. Dosage of Medicine and Course of Treatment

Small doses were administered at the beginning and the dosage was increased step by step according to circumstance. Each dose administered should not have produced more than 3 to 5 convulsions. If too many convulsions occurred, the next dose was appropriately reduced. In general, the first dose of mixed crystalline injection was 9 milligrams and the largest was 35 milligrams. The amount of the first dose of simple crystalline injection was 6 milligrams and the largest was 20 milligrams. Injections were administered every 2 to 3 days and every 3 to 6 injections constituted one round (course) of treatment.

4. Evaluation of the Effectiveness of Treatment

After the course of treatment ended, the patients were given oral vitamins. They were not given any anti-psychotic drugs. After 3 to 7 days of observation, all doctors of the clinic conferred to evaluate the immediate effectiveness of the treatment. The criteria for effectiveness of the treatment were: (1) Completely cured: All psychotic symptoms disappeared completely. Patients recovered their self consciousness and their adaptability to the environment was good. (2) Visibly improved: All psychotic symptoms disappeared. Some self consciousness was recovered, and contact with the environment was good. (3) Improved: Psychotic symptoms reduced. Patients could manage their own lives but lacked self consciousness. (4) Ineffective: Symptoms did not improve. After effectiveness of the

treatment was evaluated, anti-psychotic drugs were given to firm up the effectiveness of treatment. Other forms of treatment were given to patients when the effectiveness of the treatment was unsatisfactory.

Results of Observation

1. Immediate Effectiveness of the Treatment

As shown in Table 1, effectiveness of mixed crystalline injections of parasites of coriaria was 71.1 percent, and the manifestation of effectiveness was 46.7 percent. The effectiveness of hydroxyl coriaria toxin was 72.0 percent and the manifestation of effectiveness was 46.0 percent. Thus the effectiveness of treatment by mixed crystalline and simple crystalline injections was very close. They were also generally close to the immediate effectiveness of insulin induced coma therapy, electro-convulsive therapy and chlorpromazine in treating schizophrenia in our nation (Table 2).

2. Analysis of the Possible Causative Factors Affecting Treatment

(1) Medicinal preparations: We used single decoctions of parasites of coriaria and new galenicals to treat schizophreniz and we compared the effectiveness of the treatment by these decoctions and galenicals, and effectiveness of the medicines described in this article and listed the results in Table 3. The effectiveness of the treatment by mixed crystalline and simple crystalline injections and that of the new galenicals were similar while the effectiveness of treatment by decoctions was higher. However, measurements of χ^2 showed $\chi^2 = c.44$, $p > 0.05$, and the difference was not great.

(2) The number of treatments and effectiveness: There were no major statistical differences in the number of treatments and the effectiveness of the treatment according to observations of treating 90 cases of schizophrenia by mixed crystalline injections ($\chi^2 = 0.865$, $p > 0.05$). This may have been due to the fact that in many cases, one to three treatments produced visible results and therefore treatment did not continue. There were some cases which needed four to six treatments to achieve higher effectiveness.

Analysis of the records of 60 cases showed that the time when effectiveness of the treatment began was generally after one to three treatments. There were 55 such cases (91.7 percent). There were 29 cases which showed effective results after one treatment (48.3 percent). This indicated that effectiveness of this method of treatment generally manifested itself rather quickly.

(3) Intensity of reaction to the treatment and effectiveness: During treatment, such reactions as sweating, frequent urination, vomiting, convulsions and consciousness becoming unclear could occur. At present, we rely mainly on the number of convulsions to determine the intensity of the reaction. The dosage of medicine for each treatment was measured to produce only three to five convulsions. The relationship between the total number of

Table 1

Immediate Effectiveness of the Treatment of 140 Cases of Schizophrenia Using Mixed Crystalline
and Simple Crystalline Injections of Parasites of Coriaria

	Cured		Visibly Improved		Improved		Ineffective		Total	
	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%
Mixed crystalline injection of para- sites of coriaria	23	25.6	19	21.1	22	24.4	26	28.9	90	100.0
Hydroxyl coriaria toxin	7	14.0	16	32.0	13	26.0	14	28.0	50	100.0
Total	30	21.4	35	25.0	35	25.0	40	28.6	140	100.0

Table 2

Comparison of the Effectiveness of Treatment of Schizophrenia by Preparations of Parasites of Coriaria and Several Types of Treatment in Our Nation

Method of Treatment	Total No. of Cases	Cured		Visibly Improved		Improved		Ineffective	
		Cases	%	Cases	%	Cases	%	Cases	%
Nanjing Psychiatric Prevention Hospital (4)	2533	747	29.5	394	15.6	732	28.9	660	26.0
Insulin coma therapy									
No. 191 Hospital of the Chinese People's Liberation Army (5)	264	96	36.4	36	13.6	72	27.3	60	22.7
Electroconvulsive therapy									
Shanghai Municipal Psychiatric Hospital (6)	124	56	41.1	24	19.4	32	25.8	17	13.7
Chlorpromazine									
This article	140	30	21.4	35	25.0	35	25.0	40	28.6
Parasites of coriaria									

Table 3

Effectiveness of Treatment of Schizophrenia by Four Types of Preparations of Parasites of Coriaria

Preparations of parasites of Coriaria	Cured		Visibly Improved		Improved		Ineffective		Total	
	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%
Decoctions	19	43.2	9	20.5	9	20.4	7	15.9	44	100.0
New galenicals	44	26.3	32	19.2	29	17.4	62	37.1	167	100.0
Mixed crystal- line injections	23	25.6	19	21.1	22	24.4	26	28.9	90	100.0
Simple crystal- line injections	7	14.0	16	32.0	13	26.0	14	28.0	50	100.0
Total	93	26.5	76	21.7	73	20.8	109	31.0	351	100.0

convulsions throughout the entire course of treatment and the effectiveness of the treatment of only 10 cases (27.8%) $\chi^2 = 8.604$, $p > 0.01$) showed effective results. This was because patients who reacted better to this treatment were given fewer treatments and each course of treatment did not necessarily reach six times and thus the total number of convulsions was few. Patients who reacted badly to this treatment were treated more times and the total number of convulsions increased. In the 23 cases which were cured, there were three cases in which the patients were cured after one treatment. In one other case, the patient was cured after five treatments and full recovery was achieved without any convulsions.

(4) History of illness and effectiveness of treatment: There were 49 cases of patients who had suffered the disease for 2 years or less. Of these, treatment of 24 cases showed effective results (49.0 percent). There were 41 cases of patients who suffered the disease for over 2 years. Of these, treatment of 18 showed effective results (43.9 percent). Also of these cases, there were four with a history of illness of over 10 years. Three of them were cured. This indicated that better results could also be achieved by this method in treating cases with a long history of illness.

(5) Type of illness and effectiveness: As shown in Table 5, this method of treatment has a definite effect in treating latent schizophrenia, paranoid schizophrenia, catatonic schizophrenia and hebephrenic schizophrenia, but treatment of slow and progressively serious clinical cases of symptoms of regression was not effective.

3. Changes in Treatment and Raising the Effectiveness of Treatment

Of the 90 cases treated by mixed crystalline injections, 30 had previously been treated unsuccessfully by anti-psychotic drugs and electro-convulsive therapy. After the method of treatment was changed to the use of mixed crystalline injections, eight cases were cured, eight others showed visible improvement, four cases showed improvement, and treatment of 10 cases was ineffective. Of the 26 cases treated by mixed crystalline injections ineffectively, 25 were treated by anti-psychotic drugs and electro-convulsive therapy. One case was cured, 11 cases showed visible improvement, 10 cases improved, and treatment of three cases was still ineffective. Of the 42 cases which were cured or which showed visible improvement after being treated by mixed crystalline injections, there were 14 cases in which the condition wavered before release from the hospital (33.3 percent). After these cases were given additional anti-psychotic drugs, nine cases improved and the effectiveness of the original treatment was sustained. The effectiveness of the original treatment continued to deteriorate in five cases. This indicated that the use of parasites of coriaria, anti-psychotic drugs and electro-convulsive therapy in treating schizophreniz can be mutually supplementary.

4. Observation of the Three Types of Contents of Parasites of Coriaria

According to chemical studies of parasties of coriaria, the major lactones are coriaria toxin (coriamyrtin), hydroxyl coriaria toxin (tutin) and

Table 4

Relationship Between the Effectiveness of the Treatment of Schizophrenia by Mixed Crystalline Injections in the Immediately Ensuing Period and the Total Number of Convulsions

Number of Convulsions	Cured	Visibly Improved	Improved	Ineffective	Total
0	1	...	1	...	2
1~3	6	3	...	...	9
4~6	5	...	3	2	10
7~9	3	2	5	1	11
10~12	3	9	4	6	22
Subtotal	18	14	13	9	54
13~15	4	3	4	7	18
16~18	1	1	2	8	12
Over 19 times	...	1	3	2	6
Total	5	5	9	17	36

Table 5

Relationship Between the Type of Schizophrenia and Effectiveness of Treatment of 90 Cases Using Mixed Crystalline Injections

Type of Schizophrenia	Cured	Visibly Improved	Improved	Ineffective	Total
Latent	11	11	14	13	49
Paranoid	7	4	...	7	18
Hebephrenic	4	4	6	3	17
Catatonic	1	...	...	...	1
Simple	...	...	2	3	5
Total	23	19	22	26	90

coriatin (7). The results of comparative trial applications are described below:

The dosage of coriamyrtin producing a reaction was small. Convulsions were induced within several minutes to half an hour after intramuscular injections. However, in most cases, only one convulsion was induced. In treating five cases of schizophrenia, treatment was ineffective in four cases and one case improved. The highest amount of coriatin used in one dose reached 500 milligrams (given intravenously). It did not induce convulsions. Four cases were treated but treatment was ineffective in all cases. Reactions to treatment by various doses of tutin and mixed crystalline injections were generally the same.

5. Complications During Treatment

Treatment by parasites of coriaria is a violent form of treatment. During the course of treatment, such side effects as sweating, frequent urination, vomiting, convulsions and consciousness becoming unclear occurred. Patients who had vomited violently may have suffered from slight internal bleeding in the stomach. Improper care of patients who suffered from convulsions may lead to such complications as dislocation of the lower jaw, loosening of the teeth, spinal cramps and bone fractures. When convulsion attacks, there is a short moment when oxygen is deficient. This will affect the functioning of such internal organs as heart vessels. In the 90 cases treated by mixed crystalline injections, six patients vomited a coffee colored fluid. One patient suffered from a dislocated lower jaw after convulsion. Four patients suffered from a shortage of breath. One patient suffered from spasm of the throat muscles. Two patients suffered from premature contraction of the heart (extrasystole) after convulsions. All of these can be eliminated quickly if they are directly treated in time.

Of the 90 cases treated by mixed crystalline injections, 86 were subjected to examinations of liver function prior to treatment. Of these 86, 11 cases had one abnormality. After treatment, these cases were reexamined and in seven cases, the function of the liver was found to have recovered. In the four remaining cases, liver function was still slightly abnormal after treatment. After treatment, liver function changed in seven cases but only slightly abnormal and these abnormalities quickly returned to normal after ordinary treatment was used to treat the liver. Abnormalities of liver function did not occur among the 50 cases treated by simple crystalline injections.

Of the patients in the group treated by mixed crystalline injections, 77 were given kidney function examinations before treatment. Sixteen cases showed slight change in kidney function. (The amount of nonprotein nitrogen in whole blood was 35 milligrams%, or the amount of muscular anhydride in whole blood surpassed 1.8 milligrams%). After treatment and reexamination of some of them, kidney function of five patients were found to have recovered, a slight change in kidney function was still found in four cases,

and seven other cases were not reexamined. After treatment, a change in kidney function was found in four cases, all slightly abnormal. Among the group of patients treated by simple crystalline injections, abnormal kidney functions were not found either before or after treatment.

In seven cases, the patients' electrocardiograms were taken. Six cases showed normal electrocardiograms. In one case, the electrocardiogram showed a left ventricle superior voltage. During the course of treatment of this case, there were no complications of the cardiovascular system. In the course of treatment, electrocardiograms were taken in nine cases. Eight cases had normal electrocardiograms. Only one case showed a shortening of the P-R interval. No cardiovascular symptoms were discovered clinically.

There were 10 patients who did not complete the course of treatment (not included in the statistics). One patient refused to eat, became exhausted and was difficult to manage. Another patient vomitted seriously and discharged coffee colored substance by vomiting. Two patients suffered difficulties in breathing after convulsions. In one case, blood pressure rose rapidly (from 100/60 to 130/80 millimeters of mercury), pulse hastened (168 pulses/minute) and breathing became rapid (30 times/minute) after convulsions. In one case, cramping and fracturing of the thoracic vertebra occurred. In four cases, visible changes in kidney function occurred. To prevent violent vomiting during the course of treatment, we administered intramuscular injections of datura metel in some cases. This basically prevented further vomiting and internal bleeding of the stomach, and it also calmed the patient throughout the entire course of treatment. However, datura metel injections may also induce side effects and complications and thus its use should be cautious and nursing and close observations should be intensified.

6. Electroencephalographic Observations

Electroencephalograms were recorded in four cases before and after treatment. Of these, two cases suffered from 0 to 1 convulsions. The electroencephalograms before and after treatment were normal. Patients of the other two cases suffered four and seven convulsions. Their electroencephalograms were intermediately and seriously abnormal, manifested mainly as dispersive medium to extremely high amplitudes of four to six times per second and two to three times per second. These two cases were reexamined 2 weeks later and their electroencephalograms showed a recovery and only a slight abnormality as recorded before treatment began.

7. Conditions at Follow-up Visits

Most patients treated by parasites of coriaria were given anti-psychotic drugs after release from the hospital. A few were given other forms of treatment because of relapse. Thus the long range effects observed in our follow-up visits were actually mostly results of comprehensive treatment. Therefore, evaluation of the single long range effects of the method of parasites of coriaria was difficult.

Discussion

1. In 1939, Ebaugh mentioned coriaria toxin (Coriamyrtin) in his introduction to the use of medication and convulsion to treat schizophrenics. He believed its "effectiveness was comparable to that of penta-tetra-nitrogen" (8). But the following year the author claimed "its effectiveness was not satisfactory" (9). We tested coriaria toxin (coriamyrtin) and its effectiveness was not good. Coriatin was almost ineffective. This article has confirmed the effectiveness of hydroxyl coriaria toxin (Tutin) in treating schizophrenia. There has not been any reports past or present on this in our nation and abroad.

2. The method of treatment using parasites of coriaria frequently induces convulsions, but the patients' fears are far less than treatment by electro-convulsive therapy. The absolute majority of patients who had been treated by electro-convulsive therapy and by parasites of coriaria said they would rather be subjected to treatment by parasites of coriaria.

One reason why electro-convulsive therapy was able to replace treatment of convulsions induced by penta-tetra-nitrogenous drugs was because the patients subjected to treatment by penta-tetra-nitrogenous drugs felt a kind of "near death" sensation before convulsions occurred and after such treatment the patient could clearly recall this sensation. Thus although both kinds of treatment by parasites of coriaria and by penta-tetra-nitrogenous drugs induce convulsions, there is a great difference in the degree of fear experienced by the patients.

3. Some clinical observations have already shown that in the treatment by parasites of coriaria, the treatment may also be effective even though convulsions were not induced (1,2). Therefore, it seems that the occurrence of convulsions is not the only cause of effectiveness of the method of treatment by parasites of coriaria. This is worth further in-depth studies.

4. Electroencephalographic observations indicated the electroencephalograms of patients who had experienced many convulsions may change abnormally but after a period they can return to normal. In past treatments, no irreversable conscious blocks or intellectual blocks were seen clinically.

5. The use of parasites of coriaria alone in treatment showed that conditions of about one-third of the patients wavered during the immediately ensuing period. However, this is a problem common to both electro-convulsive therapy and insulin coma therapy. According to the results of tracing observations of insulin coma therapy by West et al (10), it was discovered that in the treatment of 780 cases by insulin coma therapy (of which 239 cases were also treated by electro-convulsive therapy), 63.3 percent of the patients suffered relapses. Among the patients who suffered relapses, 44 percent experienced relapses within one month after treatment ended. Thus the question worth studying in the future is how to sustain the effectiveness of the treatment after treating patients by these methods. At present, we are giving patients anti-psychotic drugs after they have been treated by parasites of coriaria to sustain the effectiveness of the treatment.

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9296

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LIFE SCIENCES

TABLE OF CONTENTS OF 'STUDIA MARINA SINICA' NO 11, DECEMBER 1976

Beijing HAIYANG KUXUE JIKAN [STUDIA MARINA SINICA] in Chinese No 11, Dec 76

[Text] Contents

On the Thermodynamic Equilibrium of Nitrogen Cycle in the Sea Gu Hongkan [7357 1347 1030].....	6
Seasonal Variations in the Contents of Various States of Amino Acids in <i>Laminaria japonica</i> Aresch Ji Minghou [4764 2494 0186] Pu Shuzhu [5543 3219 3796] Cao Wenda [2580 2429 6671] Zhang Jingzhi [1728 2417 5347].....	22
The Thermodynamic State of Sea Water Gu Hongkan [7357 1347 1030] Liu Mingxing [0491 2494 2502].....	31
Quasi-harmonic Constituent Method for Analysis and Prediction of Tides. II. Analysis of Short Period Observations Fang Guohong [2455 0948 3163].....	56
A Special Method for Analysis of Ocean Wave Forces on the Small Cylinder Pile Yuan Yeli [5913 2814 4539].....	57
Computation of the Velocity of Geostrophic Flow in Shallow Water Mou Jingbang [4924 4842 2831] Gu Yuhe [7357 3768 5440].....	76
Five New Species of <i>Coscinodiscus</i> from the South China Sea Guo Yujie [6753 3768 3381].....	87
Studies on Chinese Species of <i>Gracilaria</i> Zhang Junfu [1728 1498 3940] Xia Bangmei [1115 6721 5019].....	157
With All-Out Efforts at Scientific Experiments for Higher Yield in Haidai (<i>Laminaria japonica</i> Aresch.) Cultivation The Party Branch of Xiaohao Production Bridge, Qindao People's Commune, Changdao County, Shandong Province.....	167

A Study on the Artificial Breeding and Cultivation of <i>Stichopus japonicus</i> Selenka Houkou Production Brigade, Touji People's Commune, Changdao County; Bureau of Marine Fisheries, Changdao County; Institute of Marine Fisheries, Yantai Prefecture, Shandong Province.....	182
A Preliminary Study on the Artificial Rearing of the Larvae and Juvenile of <i>Haliotis diversicolor</i> Reeve Institute of Oceanology, Chinese Academy of Sciences; Fujian Institute of Fishery Science; Laboratory of Abalone and Pearl Oyster Culture, Dongshan County, Fujian Province.....	195
The Growth of Mussels (<i>Mytilus edulis</i> L.) Along Yantai Coast Section of Experimental Molluscan Ecology, Institute of Oceanology, Chinese Academy of Sciences; Marine Cultivation Experimental Station of Yantai Prefecture; Fisheries Research Institute of Yantai Prefecture; Yantai School of Fisheries.....	210
On Three New Species of the Genus <i>Octopus</i> (Octopoda, Cephalopoda) from the Chinese Waters Dong Zhengzhi [5516 2973 0037].....	214
Studies on the Radiolaria of the East China Sea. II. Spumellaria, Nassellaria, Phaeodaria, Sticholonchea Tan Zhiyuan [6223 2535 3293] Zhang Zuoren [1728 0155 0086].....	304
The Geographical Variation of Morphological Characters of <i>Lunella coronata</i> (Gmelin) Lou Zikang [2869 1311 1660].....	329
Studies on Species of Muricidae off the China Coasts. II. Genus <i>Drupa</i> Zhang Fusui [1728 4395 4840].....	351
Notes on Chinese Species of the Family Strombidae (Prosobranchiata, Gastropoda) Ma Xiudong [7456 4839 0681].....	371
Comparative Studies on the Methods of Preparation and Preservation of Samples and Analytical Methods for Determining Fish Fat Content Wang Keling [3769 0668 3781] Li Aijie [2621 1947 2638] Huang Songfang [7806 7313 5364] Teng Wenfa [3326 2429 3127].....	388
Inhibitory Effect of the Extract of the Common Clam <i>Venerupis (Amygdala) philippinarum</i> (Adams et Reeve) on the Experimental Tumor in Rodents Marine Drugs Group, Institute of Oceanology, Chinese Academy	

of Sciences; Qingdao Institute of Materia Medica and Medicine; Division of Cancer Research, National Vaccine and Serum Institute, Beijing.....	396
Ecology and Burrow Observations on the Crabs of the Infauna of the Intertidal Zone, Qingdao Fan Zhengang [5400 2182 0474].....	403
A Wave Recorder of the Transistor Equal-Resistance Contact Type Zheng Dajun [6774 1129 6874].....	411
The Tectonic and Operation of the Piston Core Apparatus Zhang Junyuan [1728 0689 0337].....	413

9574

CS0: 4009

LIFE SCIENCES

BRIEFS

SHAANXI PREVENTIVE MEDICINE--Xian, Jan 15--Significant progress has been made in the prevention and treatment of goiters of the thyroid gland which is endemic to Shaanxi Province. A general investigation has shown that since 1975, out of 960 thousand patients, 780 thousand have been cured, and in 74 out of 88 counties where thyroid gland goiter used to be widespread, the disease has been largely brought under control or eliminated. Since 1975, the provincial committee of the party has taken measures to prevent and treat the disease. Ninety-five factories have been built to produce iodine salt. The annual volume of sales of the salt has risen from 34,000 tons to 139,000 tons in this period, which is regarded as sufficient to satisfy the local people's needs. The province has mobilized thousands of medical workers to go among the people to give treatment. Some 100 medical teams have been sent to high-incidence areas to operate on serious cases. [OW160943 Beijing XINHUA in English 1207 GMT 15 Jan 80 OW]

SHANGHAI UNIVERSITIES POOL RESOURCES--Beijing, Jan 25--Specialists in bio-engineering are now being enrolled for a 3-year course in engineering colleges. This will be followed by 2 years in medical college. This is one result of a decision recently taken by 40 institutes of higher learning in Shanghai to raise teaching quality by pooling their resources, according to GUANGMING DAILY report. Cooperation councils have been set up by groups of three to five colleges or research institutes to pool resources and manpower. These colleges and institutes give each other access to their libraries, scientific data and equipment and even send professors to lecture on each other's campuses. This type of cooperation has become necessary as research in the overlapping disciplines requires the cooperation of several departments. Last year cooperation began in individual subjects and gradually developed. The biggest project last year was the cooperative training of teachers at 20 colleges in the latest developments in mathematics. Now, cooperation has passed city boundaries and is extending from Shanghai to Nanjing and Hangzhou. [Text] [OW251209 Beijing XINHUA in English 0740 GMT 25 Jan 80 OW]

ENCYCLOPEDIA VOLUME--Medical Shanghai, 30 Jan--A volume entitled "Ear-Nose-Throat Medicine," part of China's first encyclopedia of medical science, has just been published in Shanghai. The encyclopedia, which doctors and specialists from all over China began to compile in November, 1978, under

the directorship of the minister of public health, Qian Xinzong, will be published in 88 volumes. The ear-nose-throat volume has more than 200 illustrations and an index in Chinese and English. [Text] [OW311423 Beijing Radio in English 1508 GMT 30 Jan 80 OW]

SNAIL FEVER DRUG--Beijing, 5 Feb--Chinese pharmacists have synthesized the drug praziquantel, which is effective against schistosomiasis, also known as snail fever. Snail fever still occurs in rice-growing areas in southern China. Studies of 1,200 patients show the drug was 98 percent effective in adults and a bit less in children. [Text] [OW051413 Beijing XINHUA in English 0715 GMT 5 Feb 80 OW]

MEDICAL TEAM IN YANAN--Beijing, February 14 (XINHUA)--The last of ten medical teams sent to Yanan from Beijing over the past decade is back in Beijing after accomplishing its work. Since 1969, Beijing has sent medical teams to the region for ten successive years, each team working there for a term of one year. The medical workers from Beijing have gone into the mountainous areas to practice medicine among the peasants. The teams have also given lectures and conducted training courses, and have trained some 1,600 barefoot doctors and many other medical personnel. As a result the medical level in the region has been substantially improved. Now many doctors in local hospitals can perform lower abdominal operations. In some hospitals, even operations on the upper abdomen and chest can be conducted. [Text] [OW141328 Beijing XINHUA in English 1221 GMT 14 Feb 80 OW]

SHANGHAI TRADITIONAL CHINESE MEDICINE--Some 200 doctors of traditional Chinese medicine in Shanghai have been selected to engage in teaching or research work at some research institutes or medical institutions. In May last year, the municipal public health bureau put an advertisement in the paper for selection of practitioners in Chinese medicine. Some 470 doctors applied and examinations were given to those below the age of 50. As for those over 50, selection was made primarily through recommendations. This is an effective measure taken by the municipal public health bureau to insure the study and development of traditional Chinese medicine and to combine it with Western medicine. On 10 January, the bureau held a meeting to welcome these doctors to assume their new posts. Xia Zhengnong, secretary of the Shanghai Municipal CCP Committee, attended and spoke at the meeting. Shanghai Vice Mayor Yang Kai also attended. [OW132236 Shanghai City Service in Mandarin 1130 GMT 10 Jan 80 OW]

NATIONAL MEDICAL SEMINAR--Guangzhou, 20 Jan--The national seminar on dialectic in medical science was held in Guangzhou Municipality around New Year's Day. Attending were 600 specialists and scholars from all localities, of whom half were specialists in medical science, and the other half were persons engaged in philosophical and natural dialectics studies. Participants maintained that medical science is a direct productive force because it serves the workers in preventing and treating diseases and improves their health. They pointed out that medical science has no class nature, that problems in medical science cannot be solved by political movements, and that medical science has its own law of development and is closely related to the development of other natural sciences. [Beijing XINHUA Domestic Service in Chinese 0725 GMT 20 Jan 80 OW]

MALARIA PREVENTION--Jiangsu, Shandong, Henan, Hubei and Anhui held a conference from 18 to 25 January in Kaifeng Municipality on joint prevention of malaria. Huang Shuze, vice minister of public health, participated in the conference. The conference was held under the excellent situation in which the five provinces have scored outstanding achievements in preventing malaria, reducing the outbreak rate to percent. [as printed] The 120 persons who took part in the conference included the leaders, professors, experts and professional personnel from the public health and epidemic prevention departments in the five provinces and other colleagues from Shanxi, Shaanxi, Hebei and Liaoning on the public health and epidemic prevention front. The participants reviewed and summed up malaria prevention work in the five provinces in 1979 and formulated measures and demands for preventing malaria in 1980. [HK020650 Zhengzhou Henan Provincial Service in Mandarin 1130 GMT 27 Jan 80 HK]

SHANGHAI EAR FUNCTION FORUM--Since 4 February ZIRAN ZAZHI [THE NATURE MAGAZINE] has been holding a scientific forum on distinctive functions of the human body in Shanghai. The purpose of the forum is to observe and test the peculiar functions of ears pursuant to a report that some people can identify Chinese characters with their ears. Research results will be exchanged among scientists from various localities. Twelve youngsters with this capability, aged 8 to 25, were invited to attend. On the morning of 5 February, they demonstrated this peculiar skill at the municipal science auditorium. By carefully listening to the characters placed in brown bags, most of the demonstrators could accurately identify them. Also attending the forum were scientists from Beijing University. The Chinese Academy of Sciences Atomic Nucleus Institute and other academic institutions. [Shanghai City Service in Mandarin 1130 GMT 5 Feb 80 OW]

SHANGHAI PUBLIC HEALTH MEETING--The Shanghai Municipal Patriotic Public Health Committee and the Shanghai Municipal Red Cross Society jointly held a meeting to greet the spring festival on 11 February. On behalf of the Shanghai Municipal CCP Committee and the Shanghai Municipal People's Government, Yang Kai, vice mayor of Shanghai, attended the meeting and extended spring festival greetings to the participants. He praised the work done by some 26,000 environmental sanitation workers, some 3,000 neighborhood public health workers, some 129,000 Red Cross Society members and hundreds of thousands of public health activists in Shanghai and encouraged them to make new contributions in this new year. [Shanghai City Service in Mandarin 1130 GMT 11 Feb 80 OW]

MEDICAL SCIENCE ACADEMY--Beijing, 11 Feb--The Chinese Academy of Medical Science held a spring festival tea party at the Cultural Palace for Nationalities on 10 February, presided over by its president Huang Jiasi. Attending the tea party were more than 700 people including representatives of advanced units and individuals commended at the 9 February rally of the academy, members of the academy's committee and special committees, NPC deputies and representatives of the democratic parties, overseas Chinese and Taiwanese. [OW141423 Beijing XINHUA Domestic Service in Chinese 1450 GMT 11 Feb 80 OW]

ZHEJIANG SCHISTOSOMIASIS CONFERENCE--A Zhejiang provincial conference on preventing and treating schistosomiasis was held in Hangzhou from 16 to 19 January. Over the past 2 years some 5 million square meters of land has been cleared of snails, 70,000 schistosomiasis patients have been treated and cured, and disposal of night soil has been carried out by some 9,800 production teams. More than 33,000 new wells have been built in the countryside. Nearly 75 percent of counties and cities in Zhejiang have basically wiped out schistosomiasis. The meeting also mapped out the 1980 tasks in schistosomiasis control in accordance with the guidelines of the schistosomiasis control conference of 13 provinces, municipalities and autonomous regions in south China. [OW211431 Hangzhou Zhejiang Provincial Service in Mandarin 0400 GMT 20 Jan 80 OW]

KIDNEY PRESERVATION--Lanzhou, January 21--China has found a new method by which animal kidneys can be preserved for 48 hours without affecting their capacity to function. The discovery was made by two young doctors at the hospital of the P.L.A. Lanzhou Command after five months' research. The new method is to inject a liquid mixture of Chinese and Western medicine into the arteries of the removed kidney, drench it in the same mixture, and then keep it at 6-7 degrees centigrade in a refrigerator. Laboratory tests have proven that the kidneys thus preserved can function normally, and over ten successful transplants have been made using animals. [Text] [Beijing XINHUA in English 1506 GMT 21 Jan 80 OW]

FORENSIC MEDICINE TEXT--Shanghai, January 18--One-million-word "Practical Forensic Medicine," with 350 photographs and illustrations, is being put out by the Shanghai Science and Technology Press. Specialists from seven medical colleges in Guangzhou, Xian, Sichuan, Wuhan Beijing, Zhejiang and Xinjiang collaborated in preparing the text. Chief editor is Guo Jinguan, an associate professor at Guangzhou Zhong Shan (Sun Yat-sen) Medical College. Professor Chen Kangyi of Shanghai First Medical College, an expert in forensic medicine, finalized the text, which outlines the theory and techniques of modern forensic medicine, including the appearance and examination of a corpse, inspection of material evidence, analysis of poisons, establishing the cause of death and sexual crimes. It also contains some relevant data from abroad, including analysis of criminal cases and photos of sections of organic tissue. China's first and only systematic text on this subject "Xi Yuan Ji Lu," was issued in 1247. It was written by Song Ci in the Song Dynasty (A.D. 960-1279). [Beijing XINHUA in English 0730 GMT 18 Jan 80 OW]

ACUPUNCTURE TEAM VISITS U.S.--Beijing, 21 Feb--At the invitation of the U.S. Agricultural Service Foundation, a Chinese domestic animal acupuncture anesthesia team recently made demonstrations in Tucson City in the United States. It successfully demonstrated the skill of operating on dairy cows, sheep and horses by acupuncture anesthesia. The chairman of the foundation cabled congratulations on its success to the concerned Chinese department. [OW241639 Beijing XINHUA Domestic Service in Chinese 1613 GMT 21 Feb 80 OW]

SHANGHAI HEALTH CONFERENCE--Recently the Shanghai Municipal Patriotic Health Campaign Committee and the municipal public health bureau jointly held a health and disease prevention work conference in Jiading County. The meeting pointed out that the major task in the field of public health this year is to further implement the policy of putting prevention first in medical work, develop in depth the patriotic health campaign, strictly enforce public health regulations, strengthen epidemic prevention work and speed up the eradication of schistosomiasis. Vice Mayor Yang Kai spoke at the conference. [Shanghai City Service in Mandarin 1130 GMT 22 Jan 80 OW]

HEBEI HERBALISTS RESTORATION--Some 2,400 Chinese medical practitioners throughout Hebei who were forced to return to their villages or sent down to labor have had their titles restored. Since 1980, 490 Chinese medical practitioners have been promoted to the state medical and teaching organs. There are now 14,063 Chinese medical practitioners in the province, an increase of 35 percent over 1970. At the same time, 1,390 experienced veteran Chinese medical practitioners have been assigned along with 1,050 assistants or apprentices. A total of 4,000 Chinese medical prescriptions and 3,890 copies of Chinese medical books have been collected from various areas. [HK240948 Shijiazhuang Hebei Provincial Service in Mandarin 0430 GMT 14 Jan 80 HK]

CSO: 4020

Biology

AUTHORS: LI Jingyan [2621 7231 3508]
QIAO Yijong [0829 0110 3518]

ORG: LI of Kuming Institute of Zoology, Chinese Academy of Sciences,
QIAO of Shanghai Institute of Cell Biology, Chinese Academy of Sciences

TITLE: "Cytochemical Studies on Nuclear Basic Protein of Dinoflagellate
I. *Peridinium Bipes* Stein"

SOURCE: Shanghai SHIYAN SHENGWU XUEBAO [ACTA BIOLOGIAE EXPERIMENTALIS
SINICA] in Chinese No 2, Jun 79 pp 125-130

TEXT OF ENGLISH ABSTRACT: Dinoflagellate chromosomes can not be stained by the cytochemical methods demonstrating chromosomal basic protein with acid dyes after the extraction of DNA. It was therefore believed that dinoflagellate chromosomes possessed no basic protein. The possibility cannot be excluded, however, that there are many basic protein molecules complexed separately with chromosomal DNA fibrils, and they become lost when the DNA fibrils are removed.

In order to confirm or exclude this possibility, chromosomal basic protein ought to be detected cytochemically under the condition that DNA fibrils are kept intact. The ammoniacal silver carbonate-formaldehyde technique

[Continuation of SHIYAN SHENGWU XUEBAO No 2, Jun 79 pp 125-130]

(Tramezzani et al., 1966) was used to the armoured dinoflagellate, *Peridinium bipes*. The nuclei of many individuals gave positive reaction; while others, negative. The chromosomes in squashed preparation also gave positive reaction, suggesting the site of the basic protein. Under electron microscope it was observed that in the positively reacted nucleus, the silver grains were located on chromosomes, while the nucleoplasm was free from them.

If the basic protein had been extracted with 0.25 N HDL, the cells were fixed, the chromosomes could no longer give positive reaction

When the chromosomal DNA was removed by hot trichloroacetic acid, the chromosomes would disappear completely, and nothing but corresponding empty spaces remained within the nucleoplasm. When the preparations which had been treated with hot trichloroacetic acid were stained with ammoniacal silver carbonate-formaldehyde technique and observed under light microscope, although many nuclei gave negative reaction, some of them gave weak positive reaction. In these weakly reacted nuclei, the chromosomes disappeared completely and only the nucleoplasm was weakly positive, suggesting that some chromosomal basic protein was dispersed into the nucleoplasm.

If the nucleoplasm itself possesses some basic protein, it would be demonstrated by alkaline fast green, or neutral solution of azocarmine G (Li Chingyian), or acidic bromophenol blue followed by long time differentiation with alcohol (Bloch and Hew), when chromosomal DNA fibrils remained intact. But in fact, the nuclei of *Peridinium bipes* are unstained under the above condition, indicating that the nucleoplasm did not possess free basic protein.

ZHANG Huiqi [1728 1979 4860], CHEN Xianghong [7115 0686 5725], and SHANG Weiming [0794 0251 2494] of the Shanghai Institute of Cell Biology took part in some of the work.

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AUTHORS: LI Changben [2621 2490 2609]
ZHAO Shouyuan [6392 1108 0337]
QIU Xinfang [6726 0207 5364]
XUE Jinglun [5641 0079 0243]

ORG: All of Institute of Genetics, Fudan University, Shanghai

TITLE "The Validity of Mammalian Sister Chromatid Exchanges in the Detection of Chemical Mutagenicity as Compared to the Ames Test"

SOURCE: Shanghai SHIYAN SHENGWU XUEBAO [ACTA BIOLOGIAE EXPERIMENTALIS SINICA] in Chinese No 2, Jun 79 pp 131-138

TEXT OF ENGLISH ABSTRACT: Studies were carried out on the incidence of sister chromatid exchanges induced in Chinese hamster fibroblasts (Wg3-h) that had been respectively treated with 5 different chemicals as N-methyl-N'-nitro-N-nitroso-guanidine (NTG or MNNG), ethyleniminoquinone, ethinyl oestradiol, chlordimeform (CDM) and sodium pyrosulfite. As a result, three of these, namely NTG, ethyleniminoquinone and ethinyl oestradiol which were known to give strong positive response to the Ames test, showed a significant increase in the frequency of SCE. The remaining two chemicals, CDM and sodium pyrosulfite, that gave negative results in the Ames test, also failed to elevate the SCE frequencies. The close agreement in the results obtained from these two testing systems clearly indicates that both methods proved to be equally effective in screening chemical mutagens and carcinogens.

In the course of the experiments, it was noted that ethinyl oestradiol not only markedly induced backmutations in histidine requiring mutants of *Salmonella*, but also produced a statistically significant increase in the frequency of SCE in Chinese hamster cells. Moreover, the same chemical in some higher concentrations inhibit cell growth and prolong the length of mitotic cycle in vitro, probably due to the damaging effect of the chemical on the DNA synthesis of the cell. Since this chemical is one of the components in the preparations of a widely used oral contraceptive for women, the long term use of such oral contraceptive should be taken into reconsideration.

SCE counts were made for each of the 4 groups of chromosomes contained in the diploid cell of the male Chinese hamster. It was found that the number of SCE depended largely on the length of the chromosome only, through their distribution appeared to be at random.

The authors thank QIAN Ruhong [6929 3067 4767], PAN Jiajin [3382 1367 3866] and XU Liling [6079 7737 3781] participated in some of the experiment.

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AUTHORS: CONG Xiaoqian [0654 4562 0241]
SHI Weikang [2457 3262 1660]
YAO Xin [1202 9515]

ORG: All of Shanghai Institute of Cell Biology, Chinese Academy of Sciences

TITLE: "Localization of Carcinoembryonic Antigen in Human Embryo and Fetal Intestines by Unlabeled Immunoperoxidase Technique"

SOURCE: Shanghai SHIYAN SHENGWU XUEBAO [ACTA BIOLOGIAE EXPERIMENTALIS SINICA] in Chinese No 2, Jun 79 pp 139-148

TEXT OF ENGLISH ABSTRACT: This study by light and electron microscopy with unlabeled immunoperoxidase technique was undertaken to localize carcinoembryonic antigen (CEA) in the intestines at different developmental stages, beginning from embryos of 50 days up to fetuses over 7 months of gestation. Specific rabbit antiserum to CEA was prepared with purified product isolated from Sephadex G-200 and sepharose 4B and 6B column chromatography of a crude perchloric acid extract of liver metastatic materials of a rectal carcinoma. Using the bridge method with soluble peroxidase anti-peroxidase complexes, we found that the tissue sections of the intestines from embryos at about 50-60 days of gestation were not stained. During this period the intestine was lined throughout either by a relatively thick multilayered and tall prismatic

epithelial cells (Plate I, Fig. 1) or monolayered and undifferentiated epithelium (Plate I, Fig 2). In embryo aged about 80 days, longitudinal folds developed in the intestinal mucosa and the epithelial cells and goblet cells began to differentiate independently (Plate I, Fig. 3). The free surface of the cells bordering the lumen of the intestine at this stage became positively stained, indicating the presence of CEA. As the development of fetus went on, there was a strong staining reaction on the free surface of cells bordering the lumen of intestine of fetuses aged between 3 and 6 months, and the cytoplasm of columnar epithelial cells was also lightly stained (Plate I, Figs. 4-6; Plate II, Fig. 7). With fetuses aged over 7 months their intestines still showed the same intensity of staining in mucosa surface, but the reaction in the cytoplasm became negative (Plate II, Fig. 8). In control sections whether in the case normal rabbit serum was used or the specific anti-CEA serum was absorbed beforehand with CEA, the reaction was all negative irrespective of the age of fetus (Plate II, Figs. 9-10). The same results were obtained by immunoenzymatic electron microscopy. Thus, these findings showed that after about 80 days of gestation, the fetal intestine begins to have CEA on the free surface of cells bordering lumen, reaches a high level in the second trimester of pregnancy and maintains at a similar level in the early phase of the third trimester. The appearance of CEA seems to have something to do with respect to the histological and functional differentiation of the developing fetal intestines.

The authors thank Professor Konrad C. Hsu [1776 3864 in telecode numbers] of Columbia University in the United States for his making quantities of peroxidase and DAB; JI Wenhong [1323 5113 5887] for taking part in technical work in the experiment; HE Quanpin [0149 0356 0756] and SONG Qiubao [1345 4428 1405] for providing immune and anti-CEA serums as well as crude, pure CEA; ZHONG Yixin [6945 6654 2450] and MIAO Rongrong [5379 5554 5554] for assisting in microphotography and microtoming.

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AUTHORS: ZHANG Zongliang [1728 1350 2733]
WANG Jue [3769 3778]
WANG Qiuda [3769 3808 6671]
YAO Xin [1202 9515]

ORG: All of Shanghai Institute of Cell Biology, Chinese Academy of Sciences

TITLE: "Radioresistivity of Cytostatic Effector Cells Against Tumor"

SOURCE: Shanghai SHIYAN SHENGWU XUEBAO [ACTA BIOLOGIAE EXPERIMENTALIS SINICA] in Chinese No 2, Jun 79 pp 149-153

TEXT OF ENGLISH ABSTRACT: We have previously demonstrated that spleen of mice bearing Ehrlich tumor inhibited strongly $^{125}\text{IUdR}$ uptake of tumor cells in vitro. This inhibition was associated with an increase in the number of cytostatic effector cell in the spleen of tumor-bearing mice, but the effect was found to be non-specific.

Recently, in a further study on the nature of these cytostator cell, we found that these cells were quite resistant to X-ray irradiation. Irradiation of isolated spleen cells of mice bearing-Ehrlich tumor with a dose ranged from 625 to 10,000 R had almost no effect on the inhibition of $^{125}\text{IUdR}$ uptake by tumor cells. However, normal splenic T and B lymphocytes were radiosensitive

[Continuation of SHIYAN SHENGWU XUEBAO No 2, Jun 79 pp 149-153]

and they could no longer be transformed by ConA and PWN after X-irradiation with a similar dose in vitro.

These data suggest itself that cytostatic effector cells in spleen of tumor-bearing mice are non-T, non-B cells and are radioresistant. In another yet unpublished experiments, it was shown that the filtration of spleen cells of tumor-bearing mice through an adherent column of Sephadex-B10 resulted in a complete depletion of cytostatic effector cells on tumor cells in vitro, and at the same time, these nonadherent filtrable cells were found to be able to restore markedly their capability of induced transformation by mitogens in the absence of adherent cells.

Take together all these results, it seems highly probable that cytostatic effector cells are radioresistive adherent macrophages, or "suppressor macrophages".

The authors thank ZHANG Zhenxing [1728 2182 5281] of the Shanghai Institute of Materia Medica, Chinese Academy of Sciences, for his X-ray treatment of mice spleen cells. In addition, the authors thank LIU Guoliang [0491 0948 5328], ZHOU Lingwang [0719 0109 2598], and WANG Songxia [3769 2646 7209] for taking part in some of the work.

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AUTHORS: CHEN Hanyuan [7115 3352 3293]
WANG Jue [3769 3778]

ORG: Both of Shanghai Institute of Cell Biology, Chinese Academy of Sciences

TITLE: "Cytophotometric Studies on the DNA Content in the Intestine Cells of the Nematodes (*Oswaldocruzia Hoeppli*) at the Different Stage of Growth"

SOURCE: Shanghai SHIYAN SHENGWU XUEBAO [ACTA BIOLOGIAE EXPERIMENTALIS SINICA] in Chinese No 2, Jun 79 pp 155-168

TEXT OF ENGLISH ABSTRACT: In the previous report^[8], we have observed that the DNA content of nuclei of the intestine cells in female nematodes (*Neteterakis govindi*) changed with respect to different reproductive stages. The eggs developed synchronously and hatched while still within their uterus. Similar studies are undertaken with another species of nematodes (*Oswaldocruzia hoeppli*) whose eggs developed nonsynchronously. The intestines of this parasitic worm were dissected out in saline and fixed in neutral formalin containing 0.25 M sucrose. Feulgen squashes were prepared for the cytophotometric measurement of the DNA content in their nuclei. The degree of polyploidy was estimated on the basis of haploid DNA amount in sperms using the one wavelength-two areas method.

[Continuation of SHIYAN SHENGWU XUEBAO No 2, Jun 79 pp 155-168]

There is usually no cell multiplication in somatic cells of common nematodes after hatching, however, some exception seem to occur in certain species including the one used in this work. Morphological studies showed that the size of intestine nuclei displayed a considerable variation at any stage of growth of the worms. There was also inverse relationship between the number and average size of the nuclei in their intestine. Furthermore, as the worms grew in size the average total number of intestine nuclei also increased considerably.

Cytophotometric data indicated that the nuclei of intestine in these worms reached a high degree of polyploid. In this aspect, two points should be noted: (1) Among the worms at a given stage of growth, there existed an inverse proportion between the number of intestine nuclei and their DNA amount. The more the number of nuclei in an intestine, the smaller would be their DNA value. (2) With worms having almost the same number of nuclei in intestine, the average DNA content per nucleus increased with the growth of the body-length so that DNA value of nuclei in older worms is on the average 1.37-1.85 times that of younger ones. From the data shown in table, it is also obvious that in spite of the fact that the average of total DNA content per intestine increased with the age, the total DNA value of the whole intestine varied only within a quite narrow range at a given stage of growth.

In conclusion, it is pointed out the so called metabolic DNA may exist in the nuclei of intestine in this nematodes, in the sense that their total DNA content may be with respect to the demand of metabolic requirement as the worms grow in body-length.

The authors thank ZHANG Ang [1728 2491] and WANG Genfeng [3769 2704 7685] for participating in computation and drafting work, as well as Professor XU Jinan [1776 1476 0589] for determining the species and genus of nematodes.

Received 19 Jan 1979.

AUTHORS: SHI Weikang [2457 3262 1660]
CHEN Zhenguo [7115 2182 0948]

ORG: Both of Shanghai Institute of Cell Biology, Chinese Academy of Sciences

TITLE: "Extraction of Surface Antigens From Human Fetal Liver Cells with Hypertonic Potassium Chloride"

SOURCE: Shanghai SHIYAN SHENGWU XUEBAO [ACTA BIOLOGIAE EXPERIMENTALIS SINICA] in Chinese No 2, Jun 79 pp 169-174

TEXT OF ENGLISH ABSTRACT: Surface antigen(s) on human fetal liver cells which was found to be cross-reactive with membrane associated antigens of several cultured human hepatoma cell lines was extracted from liver cells of 12-20 weeks fetuses with 3M KCl. Rabbit antisera to such antigen extracts were absorbed by affinity chromatography on Sepharose 4B-Coupled with protein mixture of human normal sera, fetal sera and 3M KCl extracts of human adult liver cells, and finally absorbed by mixed human white blood cells. Such absorbed antiserum was used to monitor the different fractions of extracted surface antigens after column chromatography on Ultrogel AcA 54, using the quenching of indirect membrane immunofluorescence and the decrease in ^{125}I -antiglobulin binding. Active fractions were thus found in the first

[Continuation of SHIYAN SHENGWU XUEBAO No 2, Jun 79 pp 169-174]

and third elution peaks. Further purification and other studies of these surface antigen(s) are in progress.

TIAN Lin [3944 2651] participated in experimental procedures.

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10424

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AUTHORS: CHEN Mu /7115 26067
LU Haokui /4151 6275 76087
ZHUANG Qiqian /8369 0796 61977
GAO Shangwu /7559 1424 29767
CHEN Shijie /7115 0013 26387
CHEN Bingneng /7115 3521 51747
XIE Kaien /6200 7030 18697
WU Xiuyu /0702 4423 37687

ORG: CHEN, LU, ZHUANG, GAO and CHEN Shijie of Institute of Oceanology, Chinese Academy of Sciences; CHEN, XIE and WU Xiuyu of Fujian Institute of Fishery Science; Laboratory of Abalone and Pearl Oyster Culture, Dongshan County, Fujian Province

TITLE: "A Preliminary Study on the Artificial Rearing of the Larvae and Juvenile of *Haliotis Diversicolor* Reeve"

SOURCE: Beijing HAIYANG KEXUE JIKAN /STUDIA MARINA SINICA/ No 11, Dec 76

ABSTRACT: The abalone *Haliotis diversicolor* Reeve is widely distributed along the coast of the southern East China Sea and

/Continuation of HAIYANG KEXUE JIKAN, No 11, Dec 76/

the South China Sea.

Rearing experiments were made on specimens larger than 6cm collected from the coast waters of Dongshan Dao, Fujian Province. In this region, during the period from May to August, with water temperature between 24-28°C, large quantities of this abalone at different stages of sexual development may be found. Its main spawning season is from mid May to late June at water temperature between 25°C to 26°C.

During the past three years we were successful in inducing spawning of sexually mature individuals under controlled temperature conditions. With an initial sea water temperature of 25.2°C, we gradually raised it to 28.7°C. Twenty minutes after we lowered the temperature of the water 2-3 degrees centigrade below the initial water temperature, the sexually mature male individuals were observed to ejaculate and the female individuals to spawn. The fertilized eggs are spherical, with a diameter of 0.20 mm (including egg membrane), the yolk measuring 0.16 mm.

AUTHOR: GU Hongkan /7357 1347 10307

ORG: Institute of Oceanology, Chinese Academy of Sciences

TITLE: "On the Thermodynamic Equilibrium of Nitrogen Cycle in the Sea"

SOURCE: Beijing HAIYANG KEXUE JIKAN /STUDIA MARINA SINICA7
No 11, Dec 76

TEXT OF ENGLISH ABSTRACT: A discussion is made on the thermodynamic equilibrium of nitrogen cycle in the sea. Most of the NH_4^+ , NO_2^- and NO_3^- must be converted to NO_3^- at thermodynamic equilibrium state.

The seasonal variations of nitrogen compounds in English channel, Long Island Sound, the Yellow Sea and the East China Sea suggest that the NH_4^+ and NO_2^- are not converted sufficiently to NO_3^- . The system of NH_4^+ , NO_2^- and NO_3^- are not in the thermodynamic equilibrium state, but there is a difference in the degree of conversion. The degree of conversion is low in the Yellow Sea and the East China Sea.

/Continuation of HAIYANG KEXUE JIKAN, No 11, Dec 767

The system of NH_4^+ , NO_2^- and NO_3^- is not in the thermodynamic equilibrium state, mainly due to activity of phytoplankton. The difference in the degree of conversion in NH_4^+ to NO_3^- is related to period of growth of phytoplankton. The NH_4^+ is converted to NO_3^- more sufficiently in the state of long period, as in the English Channel and Long Island Sound. The conversion is not sufficiently in the state of short period, as in the Yellow Sea and the East China Sea.

AUTHORS: GU Hongkan /7357 1347 10307
LIU Mingxing /0491 2494 25027

ORG: Both of Institute of Oceanology, Chinese Academy of Sciences

TITLE: "The Thermodynamic State of Sea Water"

SOURCE: Beijing HAIYANG KEXUE JIKAN /STUDIA MARINA SINICA/
No 11, Dec 76

TEXT OF ENGLISH ABSTRACT: The thermodynamic state of sea water is discussed by the systems of I, N and Fe and some properties of physical chemistry of sea water.

It is concluded that the sea water is at thermodynamic unstable state in many systems in consequence of biological activity, water movement and chemical process of estuary.

If sea water leaves the nature, it tends to thermodynamic stable state automatically.

AUTHOR: None

ORG: Houkou Production Brigade, Touji People's Commune, Changdao County; Bureau of Marine Fisheries, Changdao County; Institute of Marine Fisheries, Yantai Prefecture, Shandong Province

TITLE: "A Study on the Artificial Breeding and Cultivation of *Stichopus Japonicus* Selenka"

SOURCE: Beijing HAIYANG KEXUE JIKAN /STUDIA MARINA SINICA/ No 11, Dec 76

TEXT OF ENGLISH ABSTRACT: Under the guidance of Chairman Mao's revolutionary line, scientific activities on experimental cultivation of marine organisms have been widely and vigorously carried out along the coastal regions of China. The poor and lower-middle peasants of Changdao County, together with the researchers of the Bureau of Marine Fisheries, Changdao County and of the Institute of Marine Fisheries, Yantai Prefecture, have conducted a series of experiments on the artificial breeding and cultivation of the holothurian, *Stichopus japonicus* Selenka.

/Continuation of HAIYANG KEXUE JIKAN, No 11, Dec 76/

In 1972-1975, using the artificial induction method of increasing temperature to stimulate sperm releasing and egg production, they have successfully obtained about 170,000 juvenile holothurians.

Juveniles artificially reared in concrete ponds and fed with dried powder of various algae (*Enteromorpha*, *Sargassum thunbergii*, *Rhodomela confervoides*, etc.) and with a locally known feed "Fu-ni" (a greenish brown mud scraped from the surface of rocks that is rich in diatoms and organic debris) reached sexual maturity within a period of two years.

This paper gives a detailed account of the experiments conducted during the past four years.

9574
CSO: 4009

AUTHORS: CHEN Junyuan [7115 0971 6678]
TSOU Siping [6760 6007 1627]
CHEN Tingen [7115 2185 1869]
QI Dunluan [7871 2415 0243]

ORG: CHEN, TSOU, CHEN--Nanking Institute of Geology and Palaeontology,
Chinese Academy of Sciences, QI--Regional Geological Surveying Team, Anhui
Province

TITLE: "Late Cambrian Cephalopods of North China--Plectronocerida,
Protactinocerida (Ord. Nov.) and Yanhecerida (Ord. Nov.)"

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICA SINICA] in Chinese
No 1, Jan 79 pp 1-24

EXCERPTS FROM ENGLISH ABSTRACT: The present report is to describe the Cephalopods collected from the latest Cambrian Fengshan Formation in northern Anhui, Zaozhuang and Jinan of Shantung, and Benqi of Liaoning. The Fengshanian cephalopods in North China have provided evidences for explicating the origin of the major Cephalopoda stocks, such as Actinoceratoidea, Endoceratoidea and Nautiloidea. A fact has been proved from the present studies that the increase in complexity of siphuncle is shown in series from Plectronocerida, Yanhecerida to Endocerida. Hence, it seems probable that the Endoceratoidea was directly

[Continuation of GUSHENGWU XUEBAO No 1, Jan 79 pp 1-24]

derived from Plectronoceras through its primitive stock i.e. Yanhecerida. Of particular interest is the occurrence of Protactinocerida, which appears to represent the earliest form of Actinoceratoidea. Protactinocerida bears a large, nummuroidal siphuncle and the endosiphuncular deposits. It is believed that Actinoceratoidea directly originated from Plectronoceras through its ancestral stock of Protactinocerida.

Plectronoceras fossils in northern Anhui were collected with assistance from the Anhui Regional Geological Survey Team.

Received 5 Dec 1977.

AUTHORS: WU Wang-shi [0702 2598 1193]
ZHANG Yansheng [4545 3508 3932]

ORG: WU of Nanking Institute of Geology and Paleontology, Chinese Academy of Sciences, ZHANG of The Third Regional Geological Surveying Team, Geological Bureau of Szechuan

TITLE: "Late Palaeozoic Rugosa Corals from Batang and Yidun, Western Szechuan"

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICA SINICA] in Chinese
No 1, Jan 79 pp 25-40

EXCERPTS FROM ENGLISH ABSTRACT: The present paper deals with the rugose corals found from the latest Lower Carboniferous Xuchika formation and the Late Lower Permian Bingfeng formation in Batang and Yidun, western Szechuan. The Xuchika formation contains *Hiroshimaphyllum*, *Ozakiphyllum*, *Amygdalophyllidium* and *Ramiphyllum* with *Hiroshimaphyllum* as the leading form. It deserves to be mentioned that *Hiroshimaphyllum* was previously recorded only from the early Namurian in southwestern Japan, but unseen in this country. The Bingfeng formation yields a coral fauna of western Tethys called as the *Iranophyllum-Ipciphyllum* fauna, which, so far as known, includes *Wentzelella*, *Wentzelellites*, *Wenzelloides* (*Wentzelloides*), *W. (Multimurinus)*, *Waagenophyllum*, *Yokoyamaella* (*Yakoyamaella*), *Praewentzelella*, *Thomasiphyllum* and *Laophyllum*. Both the faunas are, however,

[Continuation of GUSHENGWU XUEBAO No 1, Jan 79 pp 25-40]

quite different in assemblage from those in the contemporaneous deposits in southwest and southeast China. It seems that the distributional pattern of the two faunas must have something to do with the geotectonic condition. The range of the *Hiroshimaphyllum* fauna is more or less controlled by the eugeo-synclinal factor; whereas the distribution of the *Iranophyllum-Ipciphyllum* fauna seems to be restricted by the fold belts.

In this paper 9 genera and 11 species are described, of which 2 genera and 6 species are recognized as new.

Received 15 Sep 1977.

AUTHOR: GENG Liangyu [5105 5328 3768]

ORG: Nanking Institute of Geology and Palaeontology, Chinese Academy of Sciences

TITLE: "Some Fresh-Water Ostracods from the Mesozoic and Cenozoic Deposits in Hainan Island, Kwangtung"

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICA SINICA] in Chinese No 1, Jan 79 pp 41-63

EXCERPTS FROM ENGLISH ABSTRACT: In this paper 4 genera and 1 subgenus are described. Among them, *Eucypris* and *Darwinula* were acquired from the Lingao formation (late Early Cretaceous) of the Jialai basin of Hainan Island; whereas *Potamocypris*, *Candonopsis* and *Cyprinotus* (*Hemicypris*) from the Changpo formation (Probable Phocene) of the Changpo basin of the same Island.

Received 23 Jun 1977.

AUTHORS: YE Songling (5509 2646 7881)
YANG Shengqiu [2799 0524 4428]

ORG: YE--Geological Institute of Qinghai Province, YANG--Geological Institute of Tibet Autonomous Region

TITLE: "Brachiopods From the Bagon Lake Series, Northern Tibet

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICA SINICA] In Chinese No 1, Jan 79 pp 64-72

TEXT OF ENGLISH ABSTRACT: The brachiopods described in this paper were obtained from the Bagon Lake series which is exposed in the west of Bagon, northern Tibet. Which contains 4 genera and 5 species, namely, *Orbirhynchia lunpolaica* (sp. nov.), *Lunpolaia cymbaliformia* (gen. et sp. nov.), *L. extenuata* (gen. et sp. nov.), *Trochifera bagonica* (gen. et sp. nov.), and *Yuezuella minor* (gen. et sp. nov.). Thus, The Bagon Lake series is believed to be of Cretaceous age, most probably, Aptian to Cenomanian judging from the brachiopods.

Received 19 Aug 1977.

AUTHOR: YE Meinuo [5509 5019 1226]

ORG: Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences

TITLE: "On Some Middle Triassic Plants from Hupeh and Szechuan"

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICA SINICA] In Chinese No 1, Jan 79 pp 73-82

TEXT OF ENGLISH ABSTRACT: Our knowledge of the Middle Triassic floras of the Northern Continent is, on the whole, quite insufficient, especially in E. Asia. However, new findings have been made in recent years at some localities in Hupeh, Szechuan, Anhwei, Kiangsu and Kweichow. The present paper is to describe the fossil plants found from the Lichuan District in western Hupeh and the Kiangyu District in Central Szechuan. The specimens are rather fragmentary, but they merit critical study.

The florule derived from the Patung Formation of western Hupeh consists of the following nine species in seven genera i.e. *Annalepis zeilleri* Fliche*, *Annalepis* sp.*, *Neocalamites meriani* (Brogn.)*, *Neocalamites* sp.*, *Radicites* sp.*, *Cladophlebis* sp.*, *Desmiophyllum* sp. (*Glossophyllum*? sp.), *Samaropsis* sp. and a *Problematicum*. Of them seven species (marked with an asterik) are identical or comparable to those of the *Muschelkalk superieur* in Lorraine of

[Continuation of GUSHENGWU XUEBAO No 1, Jan 79 pp 73-82]

France (Fliche, 1910). The remarkable resemblance of the two florules indicates that they should be approximately contemporaneous in age. Moreover, the occurrence of Ladinic fauna (pelecypods and gastropods etc.) in the Patung Formation lends support to such a conclusion.

It is worthy of note that the genus *Annalepis* Fliche was originally thought to be of gymnospermous (*Araucarites*-like) affinity. Recognizing the ligule-trace and the single sessile, horizontally elongated sporangium lying on the adaxial side of each sporophyll in our specimens and also in Fliche's (Pl. 27, figs. 4,5), it is held that they should belong to *Lepidodendrales* rather than *Gymnosperms*. The definition of *Annalepis* is therefore emended.

In addition, *Sinoctenis pulcella* sp. nov. is proposed for the specimens obtained from the Middle Triassic Tienchingshan Formation in Szechuan, a detailed description is given in the Chinese text. The difference between *Sinoctenis* and *Otozamites* is also discussed. The pinnae of *Sinoctenis* are characterized by their attachment to the upper surface rather than to the sides of the rachis as originally believed.

The list of *Progonoceratites* sp. fossils was identified by ZHANG Zuoming [1728 0155 6900] of the Nanjing Institute of Geology and Palaeontology; *Progonoceratites* sp. was identified by HE Guoxiong [0149 0948 7160] of the Nanjing Institute of Geology and Palaeontology. The author thanks the related units for providing plant fossil specimens and strata data; LAN Shanxian [5663 0810 0341] and JU Kuixiang [7263 7608 4382] of the East China Institute of Geology and Mineral Resources for providing reference specimens; LIU Yun [0491 0061] of the Nanjing Institute of Geology and Palaeontology for assisting in analyzing sedimentary facies; ZHOU Zhiyan [0719 1807 3508] and ZHANG Shanzhen [1728 0810 4394] for his comments; DENG Dongxing [6772 2639 5281] for specimen photography, and ZHANG Wucong [1728 0523 5115] for drafting.

Received 30 Nov 1977.

AUTHORS: HAN Jianxiu [7281 1696 0208]
GUO Shengzhe [6753 0524 0772]

ORG: Both of Shenyang Institute of Geology and Mineral Resources

TITLE: "Discovery of the *Nipponitella* Fauna in Sonid Right Banner of Inner Mongolia"

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICAL SINICA] in Chinese No 1, Jan 79 pp 83-88

TEXT OF ENGLISH ABSTRACT: The *Nipponitella* fauna was recently found in Sonid Right Banner of Inner Mongolia. The *Nipponitella* fauna-bearing strata was named as the Amushan formation. This formation contains *Eoparafusulina regularia*, *Schwangerina jenkinsi*, *S. deyanqimiaoensis* (sp. nov.) *Pseudofusulina ordinata*, *Nipponitella* and *Kepingophyllum deyanqimiaoense* (sp. nov.) in the upper part; *Nipponitella*, *Chalareschwagerina nelsoni nelsoni*, *C. nelsoni opima*, *Pseudofusulina* aff. *ordinata*, *Rugosofusulina alpina*, *Koninckocarina*, *Cystophore* and *Duplophyllum* in the middle part; *Pseudoschwagerina aequalis*, *Zellia colaniae* *Quasifusulina cayeuxi*, *Caninia* and *Lophophyllidium* in the lower part.

Accordingly the Amushan formation is believed to be the late Upper Carboniferous and thus may be correlated with the *Zellia Nunosei* zone, the *Triticites langsonensis* zone and the *Pseudofusulina vulgaris* zone of the Sakamotozawa formation in Japan, as well as with the upper part of Maping formation in Southwest China.

Received 12 Apr 1977.

AUTHOR: XIA Guang-sheng [1115 1684 0524]

ORG: National Geological Surveying Team of Anhui Province

TITLE: "Lower Silurian Graptolites of Wuwei, Anhui Province"

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICAL SINICA] in Chinese No 1, Jan 79 pp 89-96

TEXT OF ENGLISH ABSTRACT: The Graptolites recorded in the present paper were collected from the Lower Silurian Kaochiapien Formation in the west of Wuwei district, Anhui Province. The Kaochiapien Formation outcropped here is underlain disconformably by the *Dicellograptus szechuanensis* zone of the Upper Ordovician Wufeng Formation and contains much abundant graptolites. Accordingly, two graptolite zones may be recognized: the *Demirastrites triangulatus* above and the *Pristiograptus leei* zone below.

In the present paper are described 10 genera and 11 species, including 6 new species and 3 new subspecies as listed below: *Orthograptus chaochuensis* (sp. nov.), *O. insectiformis pusillus* (subsp. nov.), *O. wuweiensis* (sp. nov.), *Bulmanograptus medicellus* (sp. nov.), *Monoclimacis convexa* G. S. Xia (sp. nov.), *M. convexa yanshanensis* (subsp. nov.), *M. guanheensis* (sp. nov.), *Monograptus wuweiensis* (sp. nov.), *Streptograptus sartorius linearis* (subsp. nov.).

[Continuation of GUSHENGWU XUEBAO No 1, Jan 79 pp 89-96]

The author thanks LI Lixin [2621 4539 2450], NI Yunan [0242 1384 0589], and CHEN Su [7115 2485] of the Nanjing Institute of Geology and Palaeontology; Chinese Academy of Sciences, for guidance and assistance, and SHI Xiaodong [2457 4607 2639] of the Regional Geological Survey Team of Anhui Province for photography.

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10424

CSO: 4009

AUTHORS: CHEN Junyuan [7115 0971 6678]
ZOU Xiping [6760 6007 1627]
CHEN Tingen [7115 2185 1869]
QI Dunlun [7871 2415 0243]

ORG: CHEN, ZOU, CHEN of Nanjing Institute of Geology and Palaeontology,
Chinese Academy of Sciences, QI of Regional Geological Surveying Team, Anhui
Province

TITLE: "Late Cambrian Ellesmerocerida (Cephalopoda) of North China"

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICA SINICA] in Chinese
No 2, Mar 79 pp 103-124

EXCERPTS FROM ENGLISH ABSTRACT: The cephalopods here described were collected from the upper Cambrian Fengshan formation in North China. The vertical distribution of cephalopods is as follows: In the lower part of the Fengshan formation is known only a singular genus *Plectronoceras*, which seems to be the oldest cephalopod in the known record. This very genus was found to be associated with trilobites *Ptychaspis* and *Tsinania*. Actually, *Plectronoceras* occurred in the *Ptychaspis-Tsinania* zone which corresponds approximately to the Upper Franconian F. of North America in age. In the middle part of the Fengshan formation, cephalopods are very abundant locally as seen in the

[Continuation of GUSHENGWU XUEBAO No 2, Mar 79 pp 103-124]

Acaroceras-Aburoceras zone of northern Anhui and in the *Sinoeremoceras* zone of Liaoning and southern Shantung. The associated trilobites are: *Anderssonella*, *Changia*, *Haniwa*, *Pagodia*, *Wanwanaspis*, *Plethopletis*. However, no cephalopods have as yet been found in the *Mictosaukia-Coreanocephalus* zone (upper part of the Fengshan formation). Therefore, it is suggested that in the Fengshan formation the cephalopod-bearing beds may be correlated with the Trempealeauan formation in North America, and regarded as of late Cambrian age.

Received 5 Dec 1977.

AUTHOR: WU Hongji [0124 7703 1015]

ORG: Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences

TITLE: "Silurian Encrinuroides (Trilobita) From Southwestern China"

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICA SINICA] in Chinese No 2, Mar 79 pp 125-150

EXCERPTS FROM ENGLISH ABSTRACT: The Silurian trilobite-bearing rocks may be grouped into two units in Sichuan, Guizhou, Hubei, and Yunnan, southwestern China. The first unit includes the Xiangshuyuan and the Leijiatun Formations belonging to the Lower Silurian. It is characterized by *Ptilillaenus* Wu, *Leiscutellum* Wu, *Shiqiania* Chang, *Gaotania* Chang, *Hypaproetus* Wu, *Oidalaproetus* Wu, etc., with *Ptilillaenus* as the leading form. In Hubei province, the *Ptilillaenus*-bearing rocks containing *Glyptograptus incertus* Elles et Wood, *G. linearis* Rickards, *Monograptus* cf. *sedgwicki* (Portlock), *Streptograptus dextrosvus* (Linnarsson), *Monoclimacis arcuatum* Mu et al. etc., thus indicating the Llandovery age, i.e., the zone of *Monograptus sedgwicki* to the zone of *Spirograptus turriculatus*. The second unit has been named the Xiushan Formation, there occurred *Coronocephalus*, *Coronocephalina*, *Kailia*, *Parakailia*,

[Continuation of GUSHENGWU XUEBAO No 2, Mar 79 pp 125-150]

Senticucullus and *Rongxiella*, all of which are characterized by having scattered, fine granules on the surfaces of cephalon and by having large tubercles or powerful marginal spines on the free cheeks. Furthermore they were found to be associated with graptolites *Monoclimacis chuchlensis* Přibyl, and *Stomatograptus* sp., of which the first species is recorded in the *Cyrtograptus insectus* zone of Middle Silurian in Czechoslovakia, and the next is a common form of Early-Middle Silurian in Europe, Asia, and Australia. The Upper Silurian Guandi Formation is well developed in the Qujing District, E. Yunnan. In this formation only one trilobite *Acanthopyge orientalis* Wu is found, but corals, brachiopods and bivalves are very abundant. Among the brachiopods, *Nikiforovaella* and *Morinorhynchus* have been reported from the Upper Silurian of Europe, Australia and N. America.

In this paper 4 genera, 2 subgenera and 20 species including 2 new subgenera and 17 new species are described. An attempt at classifying the genera of *Encrinuroides*, *Coronocephalus* and *Kailia* is also made.

Received 29 Sep 1976.

AUTHOR: DENG Zhanqiu [6772 0594 3808]

ORG: Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences

TITLE: "Middle Devonian Tabulate Corals and Chaetetids from Dushan, Southern Guizhou"

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICA SINICA] in Chinese No 2, Mar 79 pp 151-162

TEXT OF ENGLISH ABSTRACT: This paper deals with the tabulate corals and chaetetids collected from the Longdongshui Member of the Houshan Formation in Dushan of Guizhou. The collections contain 19 genera and 50 species (including 12 new species and 3 varieties) of tabulate corals, 2 genera and 2 species of heliolitids and 2 genera and 4 species (including 2 new species) of chaetetids. The new species are: *Roemerolites dushanensis* (sp. nov.), *R. Polymorphus* (sp. nov.), *Pavastriatopora jumuwanensis* (sp. nov.), *P. jumuwanensis* var. *varia* (var. nov.), *P. jumuwanensis* var. *thamnoporoidea* (var. nov.), *Thamnopora tersa* (sp. nov.), *T. longdongshuiensis* (sp. nov.), *Gracilopora spina* (sp. nov.), *Alveolites convolutus* (sp. nov.), *A. inconstans* (sp. nov.), *Crassialveolites yunnanensis* var. *dushanensis* (var. nov.), *Calaipora mixta* (sp. nov.),

[Continuation of GUSHENGWU XUEBAO No 2, Mar 79 pp 151-162]

Placocoenites elasmatus (sp. nov.), *Aulopora mixta* (sp. nov.), *Syringoporella convexotabulata* (sp. nov.), *Chaetetes raritabulatus* (sp. nov.), and *Cyclochaetetes distortus* (sp. nov.). The tabulate corals, heliolitids and chaetetids were found together with rugose corals (*Utaratua sinensis*, *Sociophyllum minor* and *Brevisseptophyllum kochanensis* etc.) and Brachiopods (*Acrospirifer houshanensis*, *Eospiriferina lachrymosa*, *Athyrisina squameosaeformis*, *Acrospirifer fongi*, *Gypidula biplicata* and *Kwangsia perfecta* etc.). Accordingly, the tabulate coral-bearing deposits may be assignable to the early Middle Devonian stage, approximately corresponding to the Eifelian stage in Europe. Based upon the characteristic features of the tabulate corals and chaetetids, two coral assemblages may be recognized in the Longdongshui Member of the Houshan Formation, the upper assemblage is characterized by the presence of *Parastriatopora jumuwanensis*, *Favosites clarus* and *Roemerolites dushanensis*, while the lower assemblage is represented by *Pachyfavosites nilella*, *Favosites multiplicatus* and *Pachycanalicula barrandei*.

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AUTHOR: SUN Xiufang [1327 4423 5364]

ORG: Xian Institute of Geology and Mineralogy, State Bureau of Geology

TITLE: "Upper Permian Fusulinids From Zhen'an of Shaanxi and Tiewo of Gansu, NW. China"

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICA SINICA] in Chinese No 2, Mar 79 pp 163-170

TEXT OF ENGLISH ABSTRACT: The Upper Permian fusulinids recorded in this paper were collected from Zhen'an of Shaanxi and Tiewo of Gansu, NW. China. They consist of 6 genera and 20 species, including 1 new genus and 5 new species. The diagnosis of the new genus is given as follows: Genus *Tiewoella* gen nov.

Shell small, subcylindrical; median portion slightly vaulted; poles bluntly rounded. Volutions usually 4 in number. Spirotheca exceedingly thin, composed of a tectum and an ill developed diaphanotheca; but outermost volution composed of only a single layer of tectum. Septa strongly and regularly fluted throughout the length of the shell. Chomata occasionally seen in the first volution. Axial fillings not present. Proloculus minute and spherical.

Type species: *Tiewoella longa* gen. et sp. nov.

[Continuation of GUSHENGWU XUEBAO No 2, Mar 79 pp 163-170]

Remarks: The present new genus resembles *Gallowainella*, but differs from the latter in the smaller size, in having less number of volution and in the absence of axial filling.

Occurrence: Upper Permian, in Tiewo of Gansu.

Viewed in profile, fossils of *Waagenophyllum* sp. and *Leptodus tenuis* (Waagen), *Spiriferella cristata* Schelothheim were identified by JIN Tongan [6855 0681 1344] and DING Peishen [0002 1014 2830].

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AUTHORS: HE Chengquan [0149 2110 0356]
QIAN Zeshu [6929 3419 2579]

ORG: Nanjing Institute of Geology and Palaeontology, Chinese Academy
of Sciences

TITLE: "Early Tertiary Dinoflagellates and Acritarchs from the Bose
Basin of Guangxi"

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICA SINICA] in Chinese,
No 2, Mar 79 pp 171-188

TEXT OF ENGLISH ABSTRACT: The dinoflagellates and acritarchs dealt with in the present paper were obtained from the bore-hole samples of the Lower Tertiary Naudou Formation in the Bose Basin of Guangxi. A total of 11 genera and 25 species are described and illustrated, including 1 new genus, 4 new species, 1 new variety and 2 new combinations as listed below: *Bosea granulata* gen. et sp. nov., *B. granorugosa* sp. nov., *Saepodinium tiandogensis* sp. nov., *Granodiscus caperatus* sp. nov., *Pediastrum simplex* Meyen var. *deltoidea* var. nov., *Bosea* (al. *Palaeostomocystis*) *laevigata* (Jiabo, 1978) n. comb. and *B.* (al. *Rugosphaera*) *operculata* Jiabo, 1978) n. comb. The algal fossils of the Naudou Formation may be divided into 4 characteristic assemblages in ascending order: *Bosea-Leiosphaeridia-Granodiscus* assemblage, 2) *Rugosphaera-Granodiscus asphaeridia-Granodiscus* assemblage. The Naudou Formation may be assigned to

[Continuation of GUSHENGWU XUEBAO No 2, Mar 79 pp 171-188]

Late Eocene--Oligocene, mainly Oligocene in age, and its sedimentary environment represents probably the freshwater lacustrine facies.

The diagnosis of the new genus *Bosea* is briefly given below:

Tract presumably belonging to dinoflagellate cysts, circular to ovoidal in outline, without apical and antapical horns, with a large "pylone", which is often situated at the largest width of tract and represents probably the epittractal archaeopyle. Operculum attached or lost. Cingulum, sulcus and reflected tabulation absent. Hypotract larger than epittract. Surface smooth or granular, rugose, usually lacking in spine-like processes.

The authors thank the related Guangxi units for assistance in field work, LI Kunnian [2621 1024 1628] for vigorous support and assistance, HJANG Fengbao [7806 7685 1405] for analyzing specimens, MAO Jiliang [3029 4943 5328] for photography, REN Yugao [0117 3768 4108] for drafting, SONG Zhichen [1345 0037 3819] for guidance, and Professor ZHU Haoran [2612 3185 3544] of Nanjing University for very valuable comments about the paper.

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AUTHOR: ZHANG Renjie [1728 0088 2638]

ORG: Yichang Institute of Geology and Mineralogy, State Bureau of Geology

TITLE: "Cretaceous Non-Marine Lamellibranchia From Central-South China"

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICA SINICA] in Chinese, No 2, Mar 79 pp 189-196

TEXT OF ENGLISH ABSTRACT: Described in this paper are the Cretaceous non-marine bivalves collected from Central-South China. Among them are 5 genera and 28 species from the Lower Cretaceous with their distribution are shown. Besides, there are 6 upper Cretaceous bivalves (with 3 new species included), of which, 3 belong to *Plicatounio*, and the other 3 to *Pseudotryia*. It merits to be mentioned that in the *Plicatounio*-bearing bed the very three species, among the 18 known ones, are found to occur in the highest.

The author thanks Professor YANG Zunyi [2799 6690 0308] of Wuhan Geology College and Professor GU Zhiwei [7357 4249 1792] of the Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences, for the revision of the first draft and for valuable reflections; Hunan Geological Team for

[Continuation of GUSHENGWU XUEBAO No 2, Mar 79 pp 189-196]

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AUTHOR: LIU Lu [0491 6424]

ORG: Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences

TITLE: "The Geological Age of the Genus *Dysodonta* (Bivalvia)"

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICA SINICA] in Chinese, No 2, Mar 79 pp 197-201

EXCERPTS FROM ENGLISH ABSTRACT: After a thorough review of all the *Dysodonta*-bearing sequences known to date, it is clear that none of these horizons is Silurian. And, whether the upper part of 'Les marnes de Ban Hon' includes a part of early Middle Devonian deposits is, in our view, still uncertain. Thus, the distribution and range of the genus might now be clarified as follows: *Dysodonta* is an early Devonian endemic taxodont genus of Eastern Yunnan, Kwangsi and Northern Vietnam. The short range of the genus make it an important element for the local biostratigraphy of early Devonian.

Besides, McAlester (1968) was in doubt of the presence of the resilium in *Dysodonta* denoted by Mansuy. He then referred the genus to the family Malletiidae (McAlester, in Moore 1969, p. N233). So far as I know, most

[Continuation of GUSHENGWU XUEBAO No 2, Mar 79 pp 197-201]

Chinese materials have revealed well preserved resilifers. Therefore, Mansuy's description seems proper and the placement of the genus in Malletiidae remains to be consulted. Which high taxa *Dysodonta* should be referred to would be a subject discussed elsewhere.

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AUTHOR: WANG Rennong [3769 0088 6593]

ORG: Geologic and Prospecting Team 147, Ministry of Coal-Industry

TITLE: "On the Occurrence of a Bipinnate Frond in *Neuropteridium? Nervosum* Halle From the Upper Shihhotse Formation of Northern Jiangsu"

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICA SINICA]. in Chinese, No 2, Mar 79 pp 202-203

TEXT OF ENGLISH ABSTRACT: *Neuropteridium? nervosum* Halle, one of the most characteristic elements of the flora of the Upper Shihhotse Formation in North China, has recently been found in the Lungtan coal-bearing formation of South China, and exhibits with certainty an age of late Permian. This species was originally described by Halle in 1927; however, its generic determination cannot definitely be made until more material is available. It has remained a dispute to be settled since half a century ago. The occurrence of a bipinnate frond in *N.? nervosum* Halle from the Upper Shihhotse formation has led the present author to come to the conclusion that *Neuropteridium? nervosum* belongs undoubtedly to the genus *Pecopteris*, this plant being, therefore, known as *Pecopteris nervosa* (Halle) Wang, nov. comb.

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AUTHORS: LI Fenglin [2621 7685 7792]

LIU Lu [0491 6424]

ORG: LI of Institute of Vertebrate Palaeontology and Palaeoanthropology, Chinese Academy of Sciences, Beijing, China, LIU of Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences, Nanjing, China

TITLE: "Activities of PSC Reinitiated"

SOURCE: Beijing GUSHENGWU XUEBAO [ACTA PALAEONTOLOGICA SINICA] in Chinese, No 2, Mar 79 pp 205-206

TEXT OF ENGLISH ABSTRACT: Council members of the Palaeontological Society of China (PSC) met on April 1st, 1978 at IVPP in Beijing. The council passed the decision that the PSC recommences and takes immediate measure to accelerate all its activities.

The first important move of the Council Meeting was to hold a field conference at Shanwang in Linqu County, Shandong Province, where the Middle Miocene diatomaceous earth with perfectly preserved fossils of many a invertebrate and vertebrate groups as well as floras. The conference was duely held from October 11th to 17th, 1978.

[Continuation of GUSHENGWU XUEBAO No 2, Mar 79 pp 205-206]

A move was also passed to make preparations for joining the International Palaeontological Association.

For celebrating the 50th anniversary of the PSC, two professional forums will be held in March: the Palynological Conference at Tianjin and the Micropalaeontological Conference at Hunan. Prof G. Norris, Secretary-General of the ICP, is invited to attend the Palynological Conference then. Two affiliated Societies of the PSC, i.e. the Palynological Society of China and the Micropalaeontological Society of China, will be formally founded respectively at the two conferences. The 1979 annual conference and the jubilant (50th) anniversary of the PSC will be held in April at Suzhou, Jiangsu Province. 200 or more representatives of the Society members will attend the conference. It is estimated that over a thousand of Society members are now in active preparations and about 500 papers are to be read at the meetings of the three conferences.

On November 1st, 1978, Prof. Yin Zanzun, President of the PSC, and Prof. Lu Yanhao, Vice-President of the PSC, have received a letter from Prof C. Teichert, President of the IPA, to extend the invitation of the IPA to the PSC to join the international organization. To which, Prof. Zhou Mingzhen, Secretary-

[Continuation of GUSHENGWU XUEBAO No 2, Mar 79 pp 205-206]

General of the PSC, have written to Prof Otto H. Walliser, Secretary-General of the IPA, to inform that the PSC are making necessary preparations for the formal application.

Meanwhile, the PSC has invited Prof C. Teichert, President of the IPA, Prof. O. H. Walliser, Secretary-General of the IPA, and Prof F. Takai, President of the Asian Branch of the IPA, to attend the 1979 annual conference and other related activities of the PSC.

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